How could I update

NO_X allowance allocations using output?

Guidance for States Joining the NO_X Budget Trading Program

under the NO_X SIP Call

November 29, 1999

U. S. Environmental Protection Agency

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Foreword: Who is this guidance for? What is the purpose of this guidance?

EPA has written this guidance document to help you, the staff members of State environmental agencies, as you revise your State implementation plan (SIP) in order to join the NO_X Budget Trading Program under the NO_X SIP call. We hope that this guidance is useful as you consider how to set up NO_X allowance allocations for facilities that will participate in the NO_X Budget Trading Program under the NO_X SIP call. In particular, this document describes options for how to develop NO_X allowance allocations for power plants and industrial boilers and turbines using output (electric generation or thermal energy). Other groups, particularly affected sources, may also find that the discussions in this document will help their planning and understanding of regulatory requirements.

This document is intended to describe how to allocate NO_X allowances using output. It focuses on updating allocations beginning in 2006. This guidance does not give recommendations as to whether you should base allocations on output or heat input, whether you should update allocations, how often you should update allocations, or to which sources you should allocate NO_X allowances based on output. However, it does raise issues that you will want to consider as you decide on the most appropriate approach to allocating NO_X allowances in your State.

Many emission limitations have traditionally been set on the amount of pollutant per unit of input to the process; for example, power plants and industrial boilers meet emission standards in pounds of pollutant per million British thermal units (mmBtu) of heat input (fuel usage). In recent years, there has been increasing interest in setting emission limitations based on the useful output or product of a process, rather than based on what goes into a process. Some emission limitations have always been on the basis of the amount of pollutant produced per unit of output, such as vehicle emission standards in grams per mile traveled.

A power plant or industrial boiler could reduce pollution by improving its efficiency and producing the same amount of electricity or steam from less fuel. This is an alternative to complying with an emission limitation by using cleaner inputs to the process or by putting on emission controls. Advocates of output-based emission limitations have suggested that using output as the basis for an emission limitation encourages greater efficiency.

Output-based emission limitations can be expressed as a rate, such as pounds of NO_X per

megawatt-hour (MWh) of electric output. You can also use an output basis when setting emission limitations in the form of NO_X allowance allocations. Allocations in a cap and trade system are typically determined using an emission rate value and information on the source's operating history. In the Acid Rain Program and Phase II of the OTC NO_X Budget Program, regulators calculated allocations for power plants using an emission rate factor in lb NOx/mmBtu heat input and the historic heat input in mmBtu from a particular period of time. However, you could use an emission rate factor in lb NOx/MWh and the historic electric output in MWh from a power plant to determine its allocation. Note that allowance allocations under cap and trade program do not necessarily provide the same incentives or result in the same consequences as rate-based emission standards applied without a cap. In particular, if you update allocations periodically using recent data, you may encourage increased utilization and increased efficiency of sources vying for a share of the allocations.

In the model rule for the NO_X Budget Trading Program under the NO_X SIP call, 40 Code of Federal Regulations (CFR) part 96, we provided an approach to allocating NO_X allowances based on heat input. We did this primarily because we had experience with establishing allocations based on heat input for previous programs, but we had no experience with output-based allocations and had concerns about issues of implementation and data quality. However, in the final NO_X SIP call we also committed to working together with stakeholders to resolve these issues in order to design an output allocation system that could be used by States as part of their trading program rules in their SIPs. We said that we would develop a proposed system for output-based allocations in 1999 and finalize an output-based option in 2000. Today's draft guidance is the first step in developing the guidance to States for output-based allocations that we committed to in the NO_X SIP call.

You will find some new challenges in setting allocations based on output, rather than heat input. This guidance addresses many of these issues. For example, Section I describes decisions you will need to make before you calculate NO_X allowance allocations, such as which types of output need to be measured and where, and the types of sources that may receive output-based allocations. Section II addresses how to calculate NO_X allowances for sources that produce both electricity and heat or steam as useful outputs. Section III addresses how sources would monitor

and report information on electric or thermal output. Section IV gives you background on how we considered issues in preparing this guidance and suggests additional sources of information. Appendix A provides language that you may use or modify for use in your State implementation plan if you determine NO_X allowance allocations based on output. Appendix B is a glossary to help you understand terms and abbreviations.

We are putting out this draft guidance for comment. If you wish to comment, please submit your comments no later than Wednesday, January 5, 2000 to Margaret Sheppard at EPA. Send your comments via email to sheppard.margaret@epa.gov, or at the following address:

Margaret Sheppard
USEPA
Clean Air Markets Division[1]
Mail Code 6204J
401 M St. SW
Washington, DC 20460

We intend to prepare a final version of this guidance in the year 2000.

We hope you will find this draft guidance to be useful and informative. We look forward to working together further with our State partners to improve America's air quality.

[1]Formerly the Acid Rain Division.

Table of Contents

I. What should I consider when designing my output-based NO_X allowance allocations?

A. What questions are not resolved in this guidance document?

This guidance document does not answer the following questions:

Technical issues:

This guidance assumes that all Btus of thermal output are equivalent. Is this an appropriate assumption? In other words, is one hundred mmBtu of thermal output equally valuable even if the thermal output comes from steam or water at different pressure and temperature conditions? If the thermal output is not equally valuable, then does giving NO_X allowance allocations based on each mmBtu of thermal output give an inappropriate incentive to produce thermal output at certain conditions that would not occur in the absence of an updating output-based allocation system?

What is an example of a useful material product coming from a process, besides the thermal output or electric output, which would not need to be "netted out"?

Do generating systems that do not produce alternating current through a generator use the same kinds of equipment for monitoring output (for example, a solar cell that may create direct current instead of alternating current)?

What is the appropriate American Society for Testing and Materials (ASTM) standard for calibration of a pressure tap used for measuring thermal output?
Are the consensus standards for accurate measurement of output that are mentioned in Section III.C. appropriate for the applications described, particularly for steam measurement?

What are possible formats for reporting output data?
Should sources report output data electronically to States?

We welcome comments and suggestions on how to resolve these technical questions.

Policy issues:

Should you base allocations on output or heat input?

Should you update allocations or keep a permanent allocation?

If you update allocations, how often should the update occur?

Which sources should you allocate NO_X allowances to, based on output?

Is it better to base allocations upon gross or net output?

Each State will want to make its own choices on these policy issues. In some cases, this document presents points for you to consider as you make your decisions on how to address these policy issues in your State program.

B. For which kinds of facilities does this guidance help me develop output-based allocations?

If you join the NOx Budget Trading Program under the NOx SIP call, you will be controlling NO_X emissions from the core source categories of fossil fuel-fired electric generating units serving a generator greater than 25 MWe and industrial boilers or turbines with a design heat input greater than 250 mmBtu/hr. You also may choose to include other facilities in your State's NO_X Budget Trading Program. Note that if you allocate allowances to sources other than fossil fuel-fired electric generating units, non-emitting electric generating systems, or fossil-fuel fired industrial boilers or turbines, this may extend the review time of your SIP. This is because there may be monitoring and applicability issues that need to be resolved before we can administer a trading program for other types of facilities.

This guidance will allow you to develop output-based allocations on an updating basis for the following types of facilities:

- Fossil fuel-fired electric generating units.
- Non-emitting electric generating systems. This includes nuclear power plants, hydroelectric plants, wind power plants, geothermal power plants, and power plants using most other renewable energy resources. These plants must produce electricity through a generator for this guidance to apply. (Plants that do not produce electricity through a generator may not be able to use the types of equipment for monitoring electric output

that this guidance addresses.)

- Electric generating systems including boilers that combust non-fossil fuels.
- Most industrial boilers and turbines that produce steam or hot water as their forms of thermal output.
- Most cogeneration facilities (that is, facilities that produce steam or hot water and electricity in sequence).

This guidance will not help you if you decide to allocate NO_X allowances to the following kinds of facilities:

- Electric power plants that do not use generators. This includes solar cells or other devices that produce electricity directly without heating steam or moving a turbine.
- Sources that produce output in forms other than electricity, steam, or hot water. For example, this would include:
  - →Industrial boilers that produce hot exhaust, like some paper mills.
  - →Process heaters.
  - →Industrial sources that produce mechanical work, such as gas compressors or internal combustion engines.
  - →Cement kilns.
  - →Glass manufacturing plants.
  - →Nitric acid plants.

You may, but do not need to, allocate NO_X allowances based on output to all facilities in the NO_X Budget Trading Program in your state. For example, you could issue NO_X allowance allocations to fossil fuel-fired electric generating units based on output and issue allocations to fossil fuel-fired industrial boilers and turbines based on heat input (that is, fuel usage, in mmBtu). You may find it is useful to have the flexibility to issue allocations on a different basis for different kinds of facilities.

C. What provisions of my State rule may need to be changed to account for output-based NO_X allowance allocations?

You may need to change the following provisions or sections of your rule to account for output-based NO_X allowance allocations:

- Definitions
- Measurements, abbreviations and acronyms
- Applicability
- NO_X allowance allocations
- Monitoring

In Appendix A to this guidance document, you will find example language that you may use in your State rule. The example language is based upon the language in the model rule for the NO_X Budget Trading Program under the NO_X SIP call at 40 CFR part 96.

You may need to make the following sorts of changes for each of these sections or provisions:

Definitions (§96.2) –Add definitions for output, electric output, thermal output, net output, gross output, and cogeneration unit, as appropriate to your regulation. This will depend on the type of output you choose and the sources you choose to give allocations to using output (see sections "To which kinds of facilities should I give an output-based allocation?" above and "Should I base allocations on net output or gross output?" below). In addition, if you decide to issue allowances to all generation sources, you will need language to describe generating systems that combust non-fossil fuels and non-emitting generating systems. In this case, you may want to revise the definition of a NO_X Budget unit to include boilers, turbines, or combined cycle systems that combust any fuel.

Measurements, abbreviations and acronyms (§96.3)–Add abbreviations for the units of measure for output: MWh (megawatt-hour) and $mmBtu_{out}$ (measured million British thermal units of thermal output)

Applicability (§96.4)–You will need to revise this section or provision if you decide to issue allowances to all generation sources, rather than just fossil-fuel sources. NOx- emitting electric

generating systems, including units combusting either fossil fuel or non-fossil fuel, will need to meet the requirements for NO_X Budget units. These include the requirements to hold allowances covering emissions and to monitor and report NO_X emissions and output data. Any sources that combust non-fossil fuels will need to meet the same requirements as fossil fuel-fired units. Non-emitting generating systems will need to meet the requirements for owners of a general allowance account and requirements for monitoring and reporting output data. If you handle applicability through your definitions, review your definitions to see if they still are appropriate.
NO_X allowance allocations (§96.42)–You will be making most of your rule revisions in this section. The allocations section of your rule will need to address the issues discussed in Section II of this guidance document. You may need different calculation formulas and procedures for adjusting the amounts of the allowance allocations so that the total amount equals the appropriate portion of your trading program budget. Also, you will need to address whether to update allocations for your facilities and, if so, how often to update allocations for your facilities.
Monitoring (§§96.70 through 96.76)–If you choose to include all generation sources instead of fossil-fuel fired sources only, then you will need to add requirements for the owner or operator of a source combusting non-fossil fuels to monitor, record and report emissions and source operating information. See section III.D of this document, "What other monitoring requirements must facilities meet if they do not combust fossil fuel?".

You may also want to include a new section concerning requirements for monitoring output data for fossil fuel-fired units. Also, all fossil fuel-fired units, sources combusting non-fossil fuels, and non-emitting generating systems will need to measure output, keep records and report output. Depending on whether you plan to allocate based on output to electric generating units only or to both electric generating units or non-electric generating units, this section will need to specify which kinds of units must measure, record, and report output data.

D. Where do I get the data for an output-based allocation?

There are three main sources of electric generation data and one source of thermal output data currently available:

Electric generation data

- Collect data directly from facilities in your state.
- Get data from EPA. Quarterly emission reports under the Acid Rain Program contain hourly gross electric generation data for many power plants in the Program, starting in 1995. These data are not quality-assured by the Agency. For more information on data available from the Acid Rain Program, you can check the Acid Rain Program's website at http://www.epa.gov/acidrain/edata.html or call the Acid Rain Hotline at (202) 564-9620.
- Get data from the Energy Information Administration (EIA). EIA collects electric generation for certain utility and non-utility generators. This data has been collected on EIA forms 759, 767, and 860B and will continue to be collected on EIA forms 860A and 860B. Form 759 provides net electric generation for utility plants (not units) on a monthly basis for each year during the 1990s[2]. Form 767 provides net electric generation for utility boilers[3] for each month during 1997 and earlier. Form 767 information is not available for turbines or combined cycle systems. Form 860A will provide annual net electric generation from utility generators during 1998 and later. Form 860B provides annual gross electric generation from non-utility generators[4] during 1998 and later. For more information about the appropriate contact people at EIA for these forms, you can check EIA's website at http://www.eia.doe.gov/contacts/main.html or you can contact the National Energy Information Center at infoctr@eia.doe.gov, Phone: (202) 586-8800.

Thermal output data

- Collect data directly from facilities in your state.

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[2]If the utility's plants all have a total nameplate capacity of less than 50 MW, then the utility only needs to report annually instead of monthly.

[3] Utilities will report electric generation for plants with a total nameplate capacity of 100 MW or more.

[4] These include Qualifying Facilities under the Public Utilities Regulatory Policies Act and Exempt Wholesale Generators under the Energy Policy Act. Plants with a nameplate capacity of 1 MW or greater must file this form.

Considerations in using the different data sources

Here are some factors you will want to consider when deciding from where to get your output data.

-Do you intend to use output as a basis for allocation for electricity generating units only, or also for industrial boilers?

If you intend to allocate allowances on the basis of output to industrial boilers or cogeneration units, it will be necessary for you to collect thermal output data directly from sources.

-Are there any cogenerators in your state?

If your state has only electricity generating units, and none of them are cogenerators, you will only need electric generation data. It may be possible to use any of the three data sources, in that case. Note that EIA's electric generation for non-utility generators is treated as confidential, and so is not available, for years before 1998.

-What is the size of the smallest source in your State that is in the NO_X Budget Trading Program under the NOx SIP call?

EPA's data will not be available for electricity generating units serving generators of 25 MWe or less, and will not be available for combustion turbines that were built before November 15, 1990. Some data from EIA forms are not available for plants with a total nameplate capacity less than 100 MW, or at least not available on a monthly basis.

-Do you intend to allocate NO_X allowances on the basis of net or gross output? (See section I.E. of this document, "Should I base allocations on net output or gross output?")

EPA's generation data are gross electric output data for many, but not all, utility units in the Acid Rain Program. EIA's generation data for utility generators are net generation values and are gross generation values for non-utility generators. If you do a data collection, you can request either gross or net generation data.

-Do you want to use unit-level data to allocate NO_X allowances?

EPA generation data are at the unit level. Some EIA forms provide generation data for each boiler (unit), such as the form 767; other EIA forms provide generation data only for entire plants. Plant-level data would need to be apportioned to individual units at a plant

to create allocations for each unit.

-Is it important to you that data have been quality-assured, either by sources or by government agencies?

Sources are not required to perform quality assurance testing on equipment used to measure output. This is true, whether the data are reported to EPA, EIA, or to you. Some sources follow voluntary standards from the American National Standards Institute (ANSI) or the Institute of Electrical and Electronics Engineers (IEEE). Therefore, some of the data are highly accurate, but this is not consistently true.

-Is it important to you that data are gathered consistently?

You can request data in a standard format. EIA has standard forms that sources are required to submit. EPA has a standard electric format for reporting gross MW data. However, sources have the option of reporting either gross MW data or gross steam flow rate data to EPA.

-Is it important to you that data are readily available in electronic form?

Data from EIA form 759 are available in electronic files on EIA's webpage. Data from the Acid Rain Program are readily available on files on the Acid Rain Program webpage (soon to be replaced by the Clean Air Markets webpage). You can also request other data files directly from EIA.

-How quickly do you need the data?

It generally takes EPA six months to review data sufficiently before making it publicly available. EIA form 759 is usually ready within six months of the end of the year. Data from other EIA forms may take longer to become publicly available. The quickest way to obtain data may be to ask sources directly.

-How many staff members and how much time do you have to request and review data?

A State collection of data on paper can be time and resource intensive.

E. Should I base allocations on net output or gross output?

One decision you will need to make is whether to base allocations on net output or gross output. These values have different implications for monitoring and reporting of output data and

for the kinds of incentives sources will receive.

What is the difference between gross and net output?

Gross output is the total output of a process. Gross output reflects all inputs going into the process, and includes output that may be used internally in producing the output or may be lost as waste. Gross output from an electric generating unit would be the gross electric generation, in MWh, that comes directly from the electric generator terminals before any electricity is used internally at the plant. Gross output from an industrial boiler would be the gross thermal output, in $mmBtu_{out}$, that comes directly from the boiler header.

Net output is the energy available for some use other than generating the output itself. Net output is the gross output minus the output consumed in any way related to generating the output. Examples of output that must be subtracted from the gross output when calculating net output include:

- Auxiliaries loads related to thermal or electric generation, such as fuel handling and preparation equipment, pumps, motors, and fans
- Load used to operate pollution control devices
- Thermal output used in heat recovery
- House loads (loads used inside the plant)

Output does not need to be subtracted to account for:

- Thermal output used to produce another useful product besides the thermal output itself
- Line losses
- End use efficiency outside the plant

For a power plant, typically three to six percent of the gross output is used internally, depending on the emission controls used at the unit. Auxiliaries and pollution control equipment could consume as much as twelve percent of gross output.[5]

Where do facilities measure gross and net output?

Conventional power plants will measure, and will receive allocations based on, electric

[5]Information provided in "Measurement Of Net Versus Gross Power Generation For The Allocation Of NOx Emission Allowances," January 27, 1999, paper by FirstEnergy Corp.

output. Electric generators will not need to measure any additional thermal output for the purposes of supporting data for allocations. Industrial boilers and turbines will measure, and will receive allocations based on, thermal output. Industrial boilers and turbines will not need to measure any additional electric output for the purposes of supporting data for allocations.

Facilities that produce both electricity and steam or hot water as useful outputs will need to measure both thermal and electric output. Most of these are cogeneration facilities, also called combined heat and power (CHP) facilities. Cogeneration facilities tend to be more efficient because they produce thermal output and electric output in sequence, from the same heat input. In order to determine net output, facilities producing both kinds of output will need to account for parasitic and house loads for both electricity and steam or hot water.

The following diagrams and explanations describe four of the more common facility set-ups that you are likely to find in your state.[6]

Conventional electric generator (power plant) See Figure1.

Fuel is burned at A. Heat input can be measured there in various ways depending on fuel type. For liquid and gaseous fuel, fuel input can be measured directly. For solid fuel, 40 CFR part 75 uses a back calculation from exhaust content. Gross electric output could be measured at the generator terminals (B). The nominal net output would be at the buss bar (C) but this may or may not account for all of the loads that should be part of the net facility load, depending on whether the facility receives additional generation from the grid. Electricity for auxiliary and house loads might come directly from the onsite generation (D) or might come from the grid (D1) or both. In the former case, the net generation could be measured directly at the buss bar. In the latter cases, it might be easier to measure the gross (B) and subtract the total in house and parasitic electric loads, D and D1. All steam use is internal to the generation of electricity and does not need to be addressed for an allocation based on either net or gross electric output.

Industrial boiler plant. See Figure 2.

Fuel is burned at A. Heat input measurement is assumed to be as in 40 CFR part 75. Gross output could be measured at the steam header (B). Since only steam is determined on a net basis

[6]Diagrams prepared by Joel Bluestein, Coalition for Gas-Based Environmental Solutions, in a July 20, 1999 paper "Output Measurement - Net vs Gross."

and there is no central steam grid, all loads contributing to net facility load would be drawing off of this steam source. The simplest situation is where all loads contributing to net facility load are drawn at one point, allowing us to measure net steam at (C). In the alternative case (dotted lines), some house or other loads are drawn from beyond point C and must be measured and subtracted separately (C1). Note that condensate return does not affect the output calculation. It actually affects the amount of heat input to the system. Since heat input is measured directly, condensate does not affect either the input or output measurement. Electricity used for auxiliaries or house loads does not need to be addressed since there is no electric output or allocations for electric generation.

Steam-Based CHP. See Figure 3.

In this case, steam is generated in a boiler and sent to a steam turbine to generate electricity. Steam may be extracted from the turbine at various points or at the turbine outlet for other end uses. Because both electricity and steam are generated, net generation must be determined for both. Fuel input would be measured at A as in the other cases. Gross steam production of the boiler could be measured at the steam header (B), but this would be grossly overestimated since much of the energy goes to generation of electricity in the turbine. The gross available steam energy would need to be measured at the turbine exit and/or extraction points (C). In some cases, however, steam for auxiliary uses might be taken before the turbine inlet, so C would already be net of some internal uses. In some cases, C might be both the gross and net steam output. If some parasitic steam loads are served after the turbine exit, the net steam would be at D. In other cases, other loads such as house loads may be taken after C and would need to be netted out (D^1). Again, condensate return is an input factor that does not affect output or need to be measured for either input or output allocation.

Electricity is generated at the turbine and gross electricity can be measured at the terminals (E). In this case, it is more likely that at least some electric auxiliaries and house loads are supplied from another electricity source and would need to be metered separately to be subtracted out while determining net generation. Net internal energy could be measured at F and might need to be adjusted with electric house loads from the grid, measured at F^1.

Combustion Turbine-Based CHP See Figure 4.

In this system, fuel goes into the combustion turbine at A and directly drives an electric generator. Gross electric output is measured at D. The exhaust gases generate steam in the heat recovery steam generator (HRSG) and the gross steam output can be measured at B. In the simplest case, net steam and electric generation can be measured by placing the meters after auxiliary and in-house loads are drawn (E and C). It may be that some internal steam loads will need to be measured separately (C1) and some electric house loads from the grid may need to be measured separately (E1).

Figure 1
Electric Generator

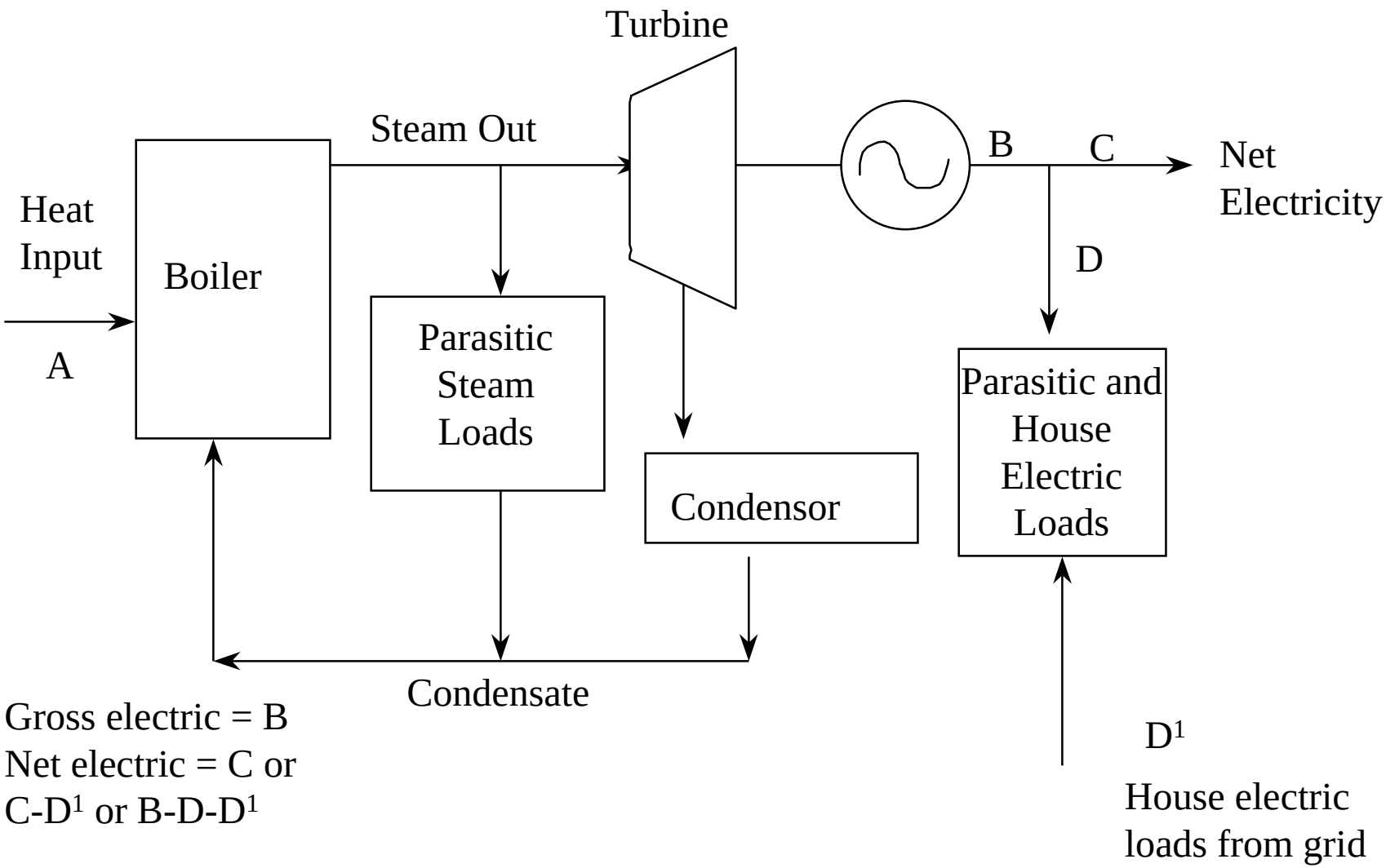
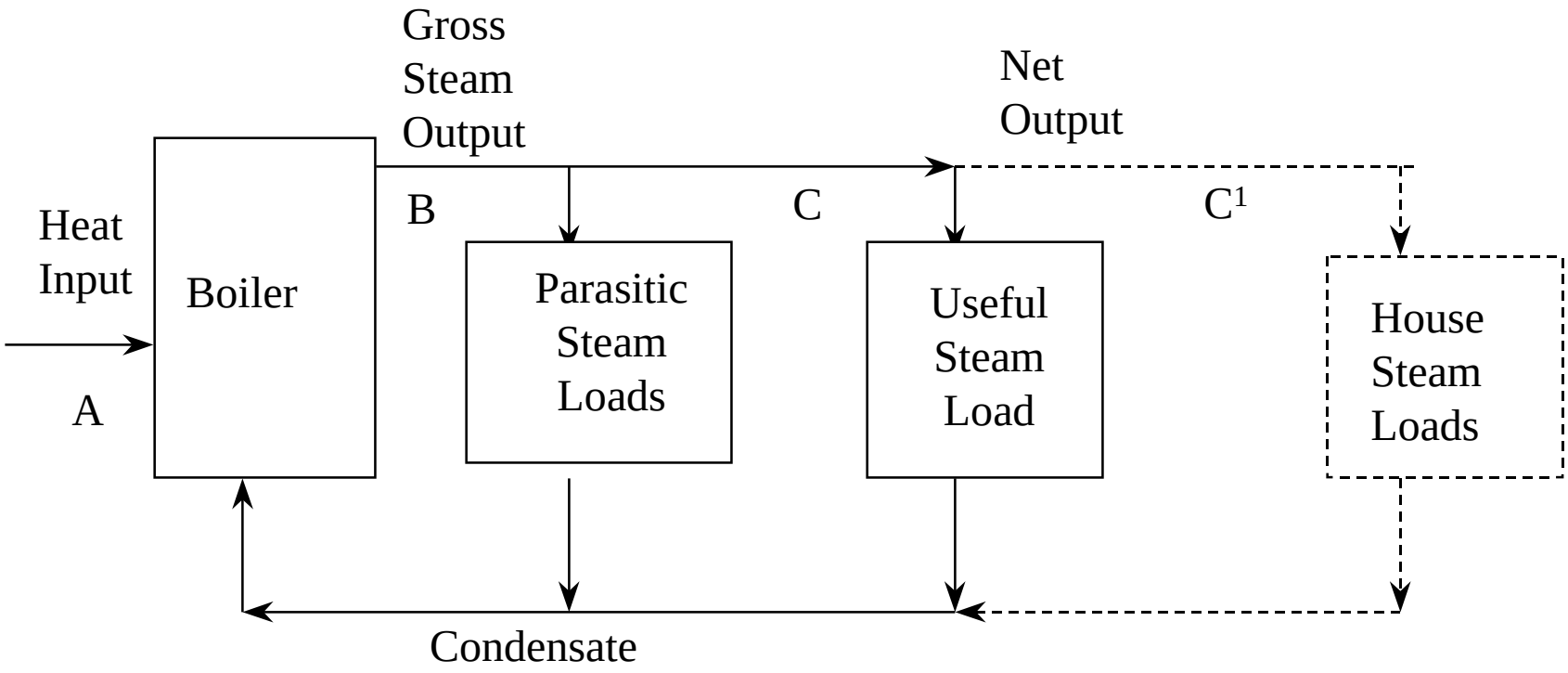


Figure 2
Steam Generator
(Industrial Boiler)



Gross steam=B

Net steam= C or C-C^{1}

Figure 3
Steam Cogen

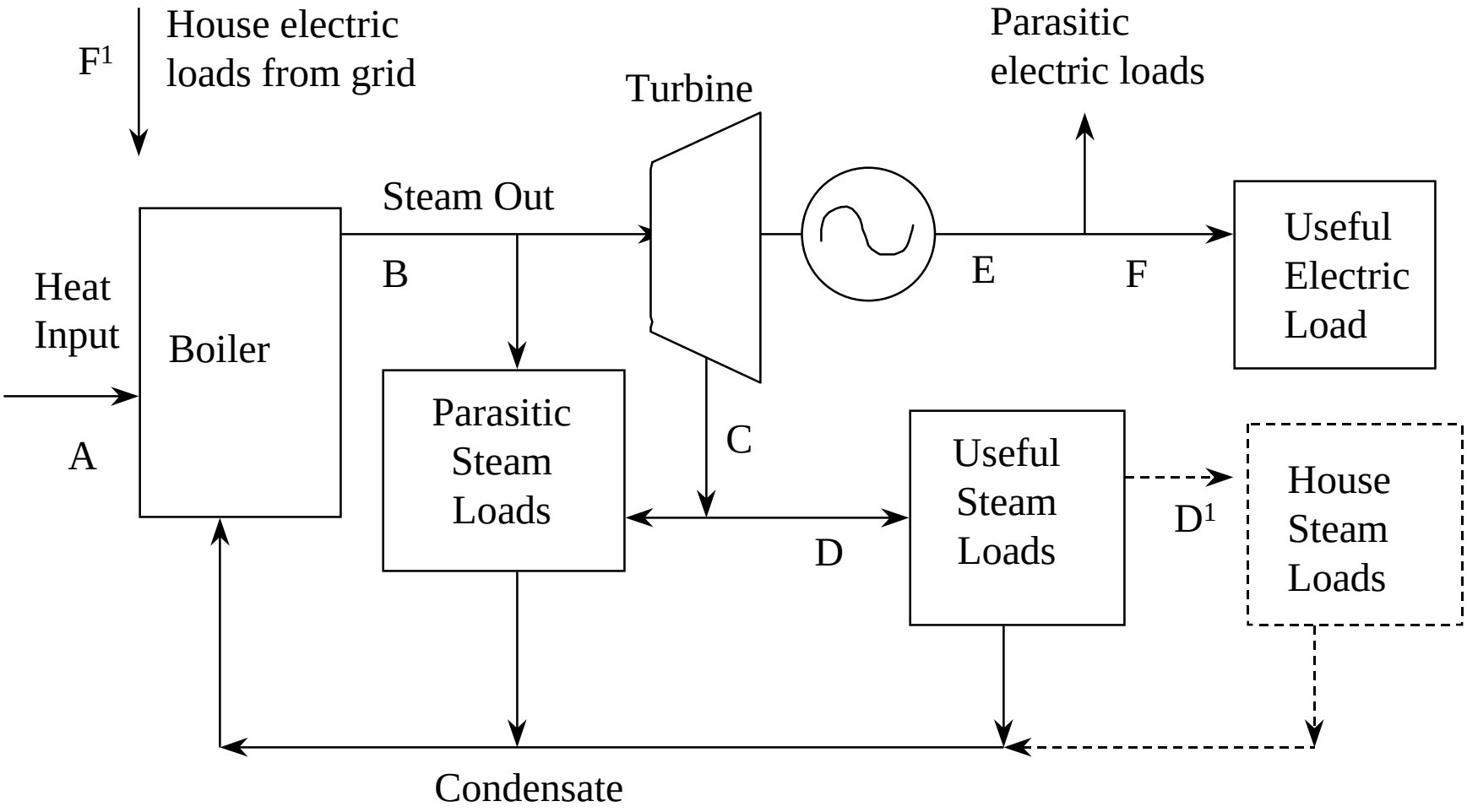
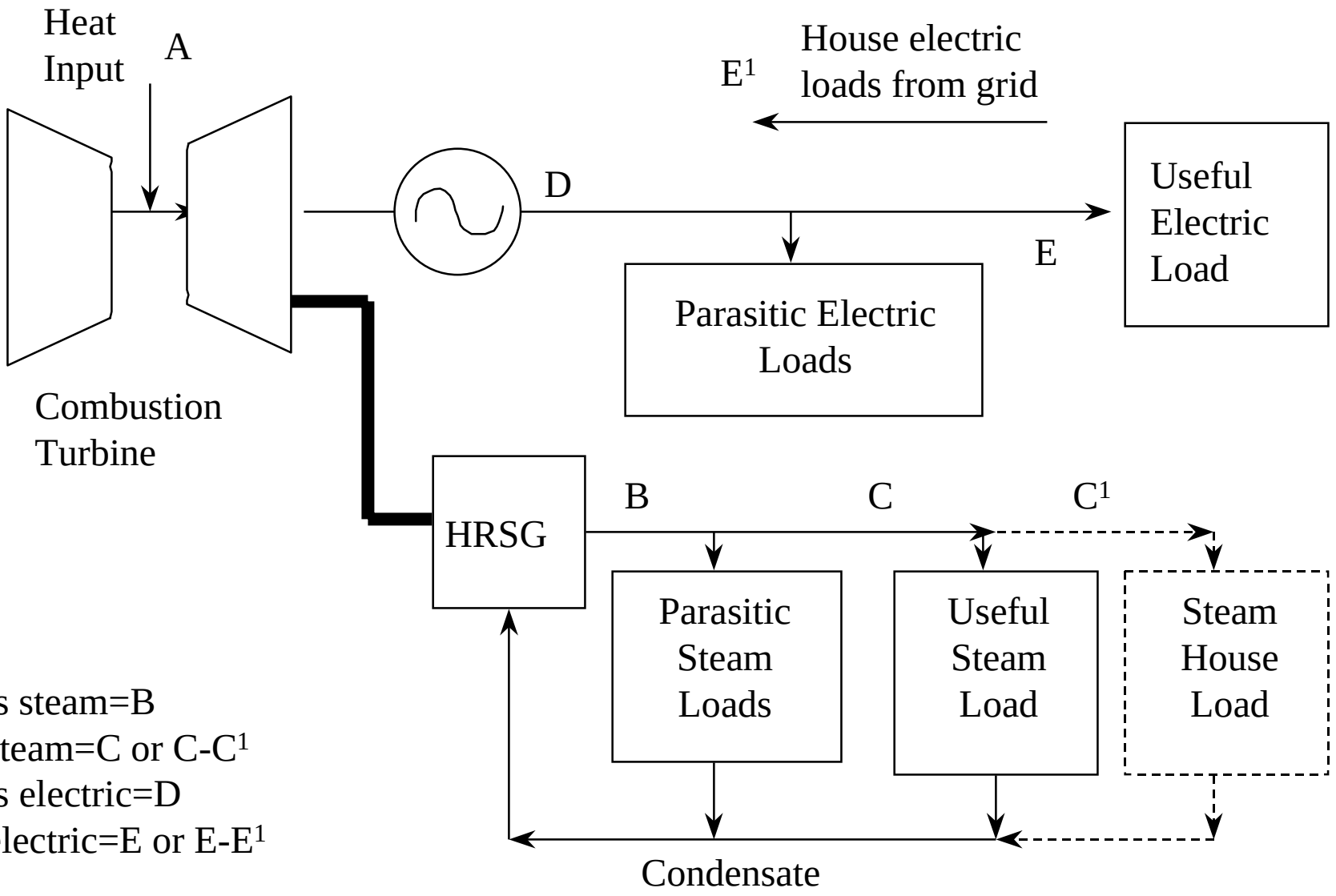


Figure 4
Combustion Turbine Cogen



How should I incorporate the concept of net or gross output into my State rule?

You should describe whether you are basing allocations based on gross or net output. You also should define gross output or net output. This will help ensure that all facilities are clear what information they need to report and will treat different facilities as equally as possible. See the first two paragraphs in this section, "Should I base allocations on net output or gross output?" under "What is the difference between gross and net output?" and see Appendix A to this document for sample definitions of net and gross output.

You also will need to have consistent monitoring and reporting requirements. Also see section III, "What output measurement equipment must affected facilities use?" and "What information must affected facilities report, and how?" in this guidance document.

What issues should I consider when deciding whether to use net or gross output to allocate allowances?

-What is your reason for wanting to use output as a basis for allocations?

Using net output may give a more direct economic link between environmental impacts and products sold. Updating allocations using either net or gross output may create more incentives for improving efficiency than an updating system using heat input.

-To what extent do you want to encourage energy efficiency?

Gross output would take into account some factors of unit efficiency, such as: age of the generating unit; type of unit (ex. drum vs. super critical); operating practices and conditions; capacity factor and the need to follow customer demand for electric generation. However, gross output does not take into account factors of unit efficiency related to operating auxiliary equipment and pollution control equipment.

Net output takes into account all factors of unit efficiency, including factors related to operating auxiliary equipment and pollution control equipment.

-To what extent do you want to encourage use of a specific fuel or NO_X control strategy?

Using net generation as a basis for allocations will tend to benefit facilities that burn cleaner fuels, or do not burn fuel at all. Net output may encourage pollution prevention more than gross output.

However, if you do not want to discourage sources that use a dirtier fuel from installing

add-on emission controls, you may want to use gross output instead. For example, if one coal fired-unit has a scrubber and a second coal-fired unit of similar size, type, and fuel usage does not have a scrubber, the unit with no scrubber will receive the same size allowance allocation using gross output and will receive a larger allocation using net output.

-Do you want to use unit-level data to allocate NO_X allowances?

Generally, gross output is measured from individual generators. For most plants, there is one and only one generator for each unit, so usually you can link gross output measurements to a unit.

Net output may be measured either for an entire plant or for individual generators, depending on the facility. Some plants measure gross output and auxiliary usage and then calculate net output, rather than measuring net output directly.

For some conventional power plants, net electric output is more difficult to determine than gross electric output. For cogenerators, gross thermal output may be more difficult to measure than net thermal output because part of the steam is diverted to generate electricity.

-Which sources of data do you plan to use to calculate allocations? (See section I.D., "Where do I get the data for an output-based allocation?")

Some data sources provide only gross generation or only net generation, but not both. For example, the electric generation data that utilities report to EPA are only gross electric output data. Thus, consider the data source you want to use at the same time that you decide whether to use gross or net output.

F. Should I allocate to units, to generating systems, or to entire facilities?

In theory, any of these approaches is possible. However, the model rule for the NO_X Budget Trading Program under the NO_X SIP call refers to compliance accounts for each NO_X Budget unit. Therefore, allocating NO_X allowances to units will require minimal rule changes compared to the other approaches. In addition, our NO_X Allowance Tracking System and our system for reconciling allowances and emissions are based primarily on the unit level.

In this document, we use the term "generating system" to refer to a system for generating electricity, which would include an energy source; a boiler or steam turbine, combustion turbine or combined cycle system; and an electric generator. Allocate to generating systems only if you are intending to allocate allowances to non-emitting electricity generating systems. This could include nuclear power plants, hydroelectric plants, wind power generators, geothermal generators, or other generators of electricity that do not emit NOx. NO_X -emitting electric generating systems should be treated as NO_X Budget units subject to all requirements under the trading program (including compliance).

In the power industry, fossil fuel-fired units serve electric generators. In order to avoid confusion with other regulatory programs that provide allowance accounts or emission limitations for units, rather than generators or generating systems, EPA strongly recommends not allocating allowances to NO_X-emitting electricity generating systems.

Also, you may want to consider if all boilers or turbines connected to an electric generator will receive allowances. This might not happen if you include only fossil fuel-fired units in your State NO_X Budget Trading Program and if a source has a situation where some of the boilers serving a generator are fossil fuel-fired and some are combusting non-fossil fuels.

In a few cases, more than one unit may serve a single generator, or a unit may serve more than one generator. In such a situation, we recommend that you or the owners or operators of the units find a simple way to apportion generation from all of the generators to all of their associated units. One simple approach would be to divide the total generation by the number of hours that each unit combusted fuel, or by the number of operating hours times the nameplate capacity of each unit.

EPA has concluded that it is possible to keep plant level allowance accounts. These are currently built into the NO_X Allowance Tracking System as "overdraft" accounts. Therefore, it is possible for a State to specify that all allowance allocations for a facility go into an account for the entire facility. However, each *unit* must still comply, and EPA will determine compliance at the unit-level. Therefore, the owners and operators of the facility will be responsible for distributing allowances among the unit compliance accounts.

In addition, if you have plant level accounts, there may be some complications in

situations where one unit at a facility is not in the NOx Budget Trading Program under the NOx SIP call, while another unit is. In this case, it will be necessary to subtract out the output from the unit that is not in the program from the total plant output in order to obtain the output for the units in the program.

Issues concerning unit (or generating system) allocations

Here are some issues to consider when deciding at which level you will allocate NO_X allowances:

-Do you want keep the same approach to allocations as under other cap and trade programs?

The Acid Rain Program, OTC NO_X Budget Program, and the model rule for the NO_X Budget Trading Program under the NO_X SIP call (40 CFR part 96) are all based upon allocations at the unit level. EPA's tracking systems and system for reconciling emissions and allowances focus on the unit level. The two NO_X programs also allow for an overdraft account at the plant level.

-Will allocation to unit reduce issues of potential ownership conflicts in your state?

In some cases, the same plant will have different owners of different units. An owner of one may not have say in how the unit is operated if another owner or operator controls the other units at the plant. It is also possible to have ownership conflicts over a single unit or an entire plant if there is more than one owner, so going to unit-level allocations may not necessarily avoid all the potential ownership conflicts.

II. How do I calculate source allocations?

A. What formula(s) do I use to calculate NO_X allowance allocations based on output?

Use the following formulas:

For calculating NO_X allowance allocations from electric output:

$$\text{Allocation} = \left(\frac{1.5 \text{ lb } NO_X}{MWh}\right)\left[\frac{\text{Electricity generation during baseline period, in MWh}}{2000 \text{ lb / ton}}\right]$$

Where:

"Allocation" is the NO_X allowance allocation, in tons.

1.5 lb NO_x/MWh is the factor for allocating NO_X allowances based on electric output.

"Electricity generation during baseline period, in MWh" is the electricity generation in the time period that you choose. For example, this could be the average electricity generation during the ozone season for the two years with the highest generation out of 1995, 1996, and 1997.

For calculating NO_X allowance allocations from thermal output:

$$\text{Allocation} = \left(\frac{0.21 \text{ lb } NO_X}{mmBtu_{out}}\right)\left[\frac{\text{Measured thermal output during baseline period, in } mmBtu_{out}}{2000 \text{ lb / ton}}\right]$$

Where:

"Allocation" is the NO_X allowance allocation, in tons.

0.21 lb /$mmBtu_{out}$ is the factor for allocating NO_X allowances based on thermal output.

"Measured thermal output during baseline period, in $mmBtu_{out}$" is the electricity generation in the time period that you choose. For example, this could be the average thermal output during the ozone season for the two years with the highest generation out of 1995, 1996, and 1997.

Source of the factors (1.5 lb/MWh or 0.21 lb/$mmBtu_{out}$):

Each allowance allocation includes a factor, in terms of mass of pollutant per measurement unit of operation. The factor is multiplied by some measure of unit operation

during a baseline period, such as heat input in mmBtu or electric output in MWh. In § 96.42, EPA provided factors of 0.15 lb NO_x/mmBtu heat input for electric generating units and 0.17 lb NO_x/mmBtu heat input for industrial boilers and turbines. In the model rule for the NO_X Budget Trading Program under the NO_X SIP call, every unit in a sector would receive an initial, unadjusted allocation that is based on the same factor. The initial allocation number is then adjusted up or down so that total allowances would not exceed the State emission budget. Thus, the exact value of the factor is not important; it is not an emission standard that a source must meet.

The suggested factors based on output are by the type of energy, rather than by the type of facility. You could use the thermal output emission rate of 0.21 lb/mmBtu$_{out}$ with thermal output either from an industrial boiler that produces only thermal output or from a cogeneration unit that produces both electricity and thermal output. You would not use that value only for industrial boilers and turbines. Likewise, you could use the electric output emission rate of 1.5 lb/MWh for setting an output-based allocation from any source that generates electricity.

If an electricity generating unit with an average heat rate of 10,000 Btu/kWh meets the NO_X SIP call target NO_X emission rate of 0.15 lb/mmBtu heat input, it will also meet a NO_X emission rate of 1.5 lb/MWh. Industry sources and environmental groups have suggested this average heat rate of 10,000 Btu/kWh[7]. Utility boilers and turbines typically have heat rates ranging between 8,500 Btu/kWh and 14,250 Btu/kWh[8].

If an industrial boiler with an efficiency of 80% meets a NOx emission rate of 0.17 lb/mmBtu heat input, it will also meet a NO_X emission rate of 0.21 lb/mmBtu$_{out}$. Industrial boilers and turbines have efficiencies ranging from 55% to 85%[9]. Industry representatives have

[7]This value was suggested at the February 3 Meeting of the Updating Output Emission Limitation Workgroup.

[8]This is the range of heat rates used in the Integrated Planning Model. EPA has used this model for much of its economic analysis.

[9]Information provided by the American Forest and Paper Association, in a letter entitled, "Comments of the American Forest & Paper Association on Output-Based Emission Limitations."

suggested that a boiler efficiency of 80% is typical and appropriate for purposes of allocating allowances[10].

Other forms of output:

You should not need other forms of output, unless you bring in additional categories of sources into the trading program that were not included in 40 CFR part 96. Note that this may extend the review time of your SIP and may even mean that we will not include you in the interstate NOx Budget Trading Program under the NOx SIP call administered by EPA.

If you were to calculate NO_X allowance allocations for other forms of output, you would use a similar equation with a factor in lb NO_X per unit of output, multiplied by the output during the baseline period, divided by 2000 lb/ton. Note that as long as this other category of sources has a sector budget and as long as this category produces only one kind of output, the size of the factor does not matter.

B. How do I calculate the unadjusted allocation for each source?

Use the emission rate factor based on output (1.5 lb/MWh or 0.21 lb/mmBtu$_{out}$). Multiply this emission rate by the output during the ozone season in the baseline period you choose.

For electric output

Multiply 1.5 lb/MWh by the electric output during the ozone season in the baseline period you choose. An example of electric output during a baseline period is the average generation from the two highest ozone seasons of electric generation from the years 1995, 1996, and 1997. Divide this number of pounds of NO_X by 2000 to calculate the source's unadjusted allocation in tons.

Example. Calculation of unadjusted allocation using electric generation

Unit 1 at the Big Jolt Generating Station generated 2,287,047 MWh in May 1 through September 30 of 1995, 2,955,019 MWh in May 1 through September 30 of 1996, and 2,633,547 MWh in May 1 through September 30 of 1997. The average generation during the ozone season for the two highest of the three years is 2,794,283 MWh. Calculate the unadjusted allocation for Unit 1

[10]See Trigen Response to EPA February 18th Issues/Questions and minutes for the February 3 and March 25 Meetings of the Updating Output Emission Limitation Workgroup

as follows:

$$Allocation = \left(1.5 \frac{lb}{MWh}\right)[2{,}794{,}283\,MWh] \Big/ 2000\,lb/ton = 2095.7\,tons$$

Finally, round up the allocation to the nearest whole ton, for an unadjusted allocation of 2096 allowances.

For thermal output

The same general approach applies for calculating an allocation based on thermal output. Multiply the emission standard of 0.21 lb/mmBtu$_{out}$ by the thermal output in mmBtu$_{out}$ during the baseline period you choose. Then divide this value by 2000 lb/ton. Generally, round up fractional tons of 0.5 or greater, or round down fractional tons of less than 0.5 to calculate the allocation to the nearest whole ton.

C. How do I develop unadjusted output-based allocations for sources that produce more than one form of output (such as, both electricity and steam)?

Allocate NO_X allowances to the unit by each type of energy, rather than once for the type of facility. Add the initial tonnages for each form of output to get a total unadjusted allocation. For example, for an electric generating unit that is a combined heat and power project, you will calculate one tonnage value for the electric output and a second tonnage value for the thermal output. Add the tonnages before rounding. Generally, round the total tonnage to the nearest whole ton to get the unadjusted allocation for the unit.

Example. Calculation by energy type.

Unit 2 at the Super-save Cogeneration Facility produces both electricity and steam. The State receives its historic electricity and steam generation for May 1 through September 30 of 1995, 1996, and 1997. The State then drops the lowest electric output value out of the three control periods and the lowest thermal output value out of the three control periods. For electric output, the State uses the average electric output from 1995 and 1997. For thermal output, the State uses the average thermal output from 1995 and 1996. The electric output and the thermal output

values that the State uses to calculate raw allocations are as follows:

Electric and Thermal Output at Super-save Cogeneration Facility Unit 2

Electric output (MWh)	Thermal output ($mmBtu_{out}$)
11,193	191,008

Unit 2's allocation portion based on electric output is calculated as:

$$Electric\ Output\ tonnage = \left(1.5\frac{lb}{MWh}\right)\left[11{,}193\ MWh\right] \Big/ 2000\ lb/ton = 8.4\ tons$$

Unit 2's allocation portion based on thermal output is calculated as:

$$Thermal\ Output\ tonnage = \frac{\left(0.21\frac{lb}{mmBtu_{out}}\right)\left[191{,}008\ mmBtu_{out}\right]}{2000\ lb/ton} = 20\ tons$$

The total tonnage for the unit then equals 8.4 + 20 = 28.4 tons. Unit 2's unadjusted allocation is 28 allowances.

It is also possible to "convert" thermal energy to electric output. However, this is not necessary, as shown by the example above. Any conversion will require assumptions that depend upon the technology being used.

D. How do I adjust the unadjusted allocations to fit my State budget?

There are a number of approaches you can use. We will describe two approaches here, using only output. In one approach, you can keep separate "sector" budgets for electric generating units and a separate "sector" budget for industrial boilers and turbines ("non-EGUs"). Then the total NO_X allowances allocated to all sources within each sector must be equal to the sector budgets for each facility type. If you include electric generating systems that are not fossil

fuel-fired, you would count allowances for those generating systems against the electric generating unit sector budget. In the second approach, you would allocate NO_X allowances to each unit (or non-emitting generating system); then you would ensure that the total NO_X allowances allocated to all trading sources within the State must be equal to the State trading budget.

Fitting unadjusted allocations to a sector budget

Under the first approach, you would:

- Add up all unadjusted allocations for an entire sector.
- Divide the unadjusted allocation for each unit (or non-emitting generating system) in the sector by the total unadjusted allocations for the sector.
- Multiply that fraction times the sector budget.

Example. Adjusting allocations in a sector budget; each sector using both thermal and electric output

The State of Ecstacy has an EGU sector budget of 2,722 tons and a non-EGU (industrial boiler) sector budget of 278 tons. The total State budget for sources in the trading program is 3000 tons. This State does not have any set-asides for new units or energy efficiency and renewable energy. The State has the following sources with the following unadjusted allocations:

Unadjusted NO_x Allowance Allocations

and Supporting Output Data for the EGU Sector

Name of electric generating unit	Baseline electric output (MWh)	Baseline thermal output ($mmBtu_{out}$)	Unadjusted allocation (tons)
Big Jolt Unit 1	1,506,278		1130
Big Jolt Unit 2	400,916		301
Megawatt Station GT-1	147,982		111
Plentopower Unit 1	605,739		455
Plentopower Unit 2	971,545		729
Squeaky Clean Cogen CT-1	120,013	601,956	154
EGU Sector total:			2880

Unadjusted NO_x Allowance Allocations

and Supporting Output Data for the Non-EGU Sector

Name of industrial boiler	Baseline thermal output ($mmBtu_{out}$)	Baseline electric output (MWh)	Unadjusted allocation (tons)
R_x Chemical Unit 1	1,286,576		135
Write-a-lot Paper Boiler 1	283,400	16,607	43
Petro Oil Unit 1	708,037		75
Non-EGU Sector total:			253

The electric generating unit allocations add up together to 2880 allowances. However, the EGU sector budget is only 2722 tons. Each electric generating unit's allocation will need to be adjusted downward in proportion to each unit's share of the total allowances. For example, you would calculate the adjusted allocation for Squeaky Clean Cogen CT-1 this way:

$$\text{Adjusted Allocation} = \left[\frac{\text{Unadjusted Allocation for Unit / Generator}}{\text{Sector Unadjusted Allocation Total}}\right](\text{Sector Budget}) =$$

$$\left(\frac{154 \text{ tons}}{2880 \text{ tons}}\right)[2722 \text{ tons}] = 146 \text{ tons}$$

The next table shows the unadjusted and adjusted NO_X allowance allocations in the electric generating section using this same calculation:

NO_X Allowance Allocations for the EGU Sector, Adjusted by Sector

Name of electric generating unit	Unadjusted allocation (tons)	Adjusted allocation (tons)
Big Jolt Unit 1	1130	1068
Big Jolt Unit 2	301	284
Megawatt Station GT-1	111	105
Plentopower Unit 1	455	430
Plentopower Unit 2	729	689
Squeaky Clean Cogen CT-1	154	146
EGU Sector total:	2880	272

In calculating adjusted allocations, tonnages are rounded up or down to the whole allowance. Generally, a fractional tonnage that is 0.5 or higher is rounded up; a fraction ton that is less than 0.5 is rounded down. However, the rounding must be done in a way that ensures that the total of the adjusted allocations equals the sector total. This means that you may not always follow the general rule for rounding.

You can do similar calculations to determine the adjusted allocations for the industrial boilers in the non-EGU sector. Note that in this sector, the unadjusted total allocation for the sector is less than the non-EGU sector budget; adjusting the allocations gives each source a larger

adjusted allocation than unadjusted allocation. Here is the example calculation for Petro Oil Unit 1:

$$\text{Adjusted Allocation} = \left(\frac{75 \text{ tons}}{253 \text{ tons}}\right)[278 \text{ tons}] = 82 \text{ tons}$$

Here are the unadjusted and adjusted NO_X allowance allocations in the non-EGU sector:

NO_X Allowance Allocations for the Non-EGU Sector, Adjusted by Sector

Name of industrial boiler	Unadjusted allocation (tons)	Adjusted allocation (tons)
R_x Chemical Unit 1	135	149
Write-a-lot Paper Boiler 1	43	47
Petro Oil Unit 1	75	82
Non-EGU Sector total:	253	278

Note that in the example, if the State of Ecstacy had a 2% new source set-aside, then the number of allowances for allocations would be 2% less. In that case, the number of allowances to go to the EGU sector would add up to 2668 tons (98% of 2722, rounded up) and the number of allowances for the non-EGU sector would add up to 272 tons (98% of 278 rounded down). In the formula above, these smaller tonnage values would be used as the "Sector Budget" when calculating the adjusted allowance allocations.

There is example rule language to support this approach in Case 2 of Appendix A to this document.

Allocation to all sources in trading program

Under the second approach, you would:

- Add up all unadjusted allocations for sources in the trading program.
- Divide the unadjusted allocation for each unit (or non-emitting generating system) in the

sector by the total unadjusted allocations for the sector.

- Multiply that fraction times the trading program.

For purposes of comparison, you can look at calculations for the same set of sources as in the example above.

There is example rule language to support this approach in Case 3 of Appendix A to this document.

Example. Adjusting allocations in the entire trading budget; some units using thermal output, some using electric output, and some using both

The State of Ecstacy has an EGU sector budget of 2,722 tons and a non-EGU (industrial boiler) sector budget of 278 tons. The total State budget for sources in the trading program is 3000 tons. This State does not have any set-asides for new units or energy efficiency and renewable energy. The State's sources have the same unadjusted allocations as in the previous example. The total unadjusted allocations equal 2880 allowances (for EGUs) plus 253 allowances (for non-EGUs), for a total of 3133 unadjusted allowances.

Each source in the trading program will have its allocation adjusted downward by 4.4 percent, because the summed unadjusted allocations are 4.4 percent greater than the trading program budget (budget of 3000÷total unadjusted allocations of 3133 = 0.958). Here is an example calculation for Squeaky Clean Cogen CT-1:

$$\text{Adjusted Allocation} = \left[\frac{\text{Unadjusted Allocation}}{\text{Trading Budget Adjusted Allocation Total}}\right](\text{Trading Budget}) =$$

$$\left(\frac{154 \text{ tons}}{3133 \text{ tons}}\right)[3000 \text{ tons}] = 147 \text{ tons}$$

The adjusted allocations for all sources in the trading program in the State are in the table below:

NO_X Allowance Allocations for Trading Sources in Ecstacy, Adjusted for the Entire Trading Budget

Name of source	Unadjusted allocation (tons)	Adjusted allocation (tons)
Electric generating units		
Big Jolt Unit 1	1130	1083
Big Jolt Unit 2	301	288
Megawatt Station GT-1	111	106
Plentopower Unit 1	455	436
Plentopower Unit 2	729	698
Squeaky Clean Cogen CT-1	154	147
Industrial boilers		
R_x Chemical Unit 1	135	129
Write-a-lot Paper Boiler 1	43	41
Petro Oil Unit 1	75	72
Trading Budget total:	3133	3000

Comparison of allocations under the two approaches

Here is a summary of the final adjusted allocations for each unit under the two different approaches for allocation adjustment: adjustment by source sector and adjustment to the entire trading budget.

NO_x Allowance Allocations for Trading Sources in Ecstacy, by Method for Adjustment

Name of source	Adjusted allocation, adjusted by source sector (tons)	Adjusted allocation, adjusted for the entire trading budget (tons)
Electric generating units		
Big Jolt Unit 1	1068	1083
Big Jolt Unit 2	284	288
Megawatt Station GT-1	105	106
Plentopower Unit 1	430	436
Plentopower Unit 2	689	698
Squeaky Clean Cogen CT-1	146	147
EGU Sector subtotal:	2722	2758
Industrial boilers		
R_x Chemical Unit 1	149	129
Write-a-lot Paper Boiler 1	47	41
Petro Oil Unit 1	82	72
Non-EGU Sector subtotal:	278	242
Trading Budget total:	3000	3000

Note that allowances move from the non-EGU sector to the EGU sector under the second approach. You may consider this an advantage if you do not want the relative size of the sector budgets to remain the same, to allow for future growth. However, this also means, in this example, that non-EGUs receive allocations based on a stricter standard than originally, while EGUs receive allocations at a slightly less stringent standard.

You may also want to compare these output-based allocations to the allocations calculated in the next section, "How should I set up allocations if I choose to allocate to some

sources based on output and to other sources based on heat input?". In that section, the electric generating units receive allocations based on output, while the industrial boilers receive allocations based on heat input. That section also considers adjusting allocations by sector and for the entire trading budget. A major difference between the heat input-based allocation and the output-based allocation for industrial boilers is that the cogeneration facility Write-a-lot Paper Boiler 1 receives higher allocations under an output-based approach. This reflects the cogeneration unit's greater efficiency.

E. How should I set up allocations if I choose to allocate to some sources based on output and to other sources based on heat input?

There are two approaches you can take. In one approach, you can keep separate sector budgets for sources receiving allocations based on heat input and a separate sector budget for sources receiving allocations based on output. Then the total NO_X allowances allocated to all sources within each sector must be equal to the sector budgets. This approach may be appropriate if you allocate allowances to electricity generating units based on output, and to industrial boilers based on heat input. In the second approach, you would allocate NO_X allowances to each unit, and then ensure that the total NO_X allowances allocated to all trading sources within the State must be equal to the State trading budget. This approach may be appropriate if you have a few individual units that cannot be monitored for output, but most units in the State can be monitored for heat input. EPA believes that all electric generating units should be able to monitor their output. In addition, all non-electric generating units can measure their heat input.

Unadjusted allocation of allowances using heat input

For an industrial boiler or turbine, the formula for calculating an unadjusted allocation using heat input is:

$$\text{Unadjusted Allocation} = \left(\frac{0.17 \text{ lb } NO_X}{\text{mmBtu}_{\text{Heat input}}} \right) \left[\frac{\text{Heat input (fuel usage) used during baseline period, in mmBtu}}{2000 \text{ lb / ton}} \right]$$

Round the allocation up to the nearest whole ton.

Fitting unadjusted allocations to a sector budget

Under the first approach, you would:

- Add up all unadjusted allocations for an entire sector.
- Divide the unadjusted allocation for each unit (or non-emitting generating system) in the sector by the total unadjusted allocations for the sector.
- Determine the fraction of the total number of allowances for each unit (or non-emitting generating system) in the sector, and then multiply that fraction times the sector budget.

Example. Adjusting allocations in a sector budget; one sector using heat input, one using output

The State of Ecstacy has an EGU sector budget of 2,722 tons and a non-EGU (industrial boiler) sector budget of 278 tons. The total State budget for sources in the trading program is 3000 tons. This State does not have any set-asides for new units or energy efficiency and renewable energy. Ecstacy has the same EGUs with the same electric output as described in the previous section II.D., "How do I adjust the unadjusted allocations to fit my State budget?". The non-EGUs in Ecstacy have the following unadjusted allocations and heat input data:

Unadjusted NO_x Allowance Allocations

and Supporting Heat Input Data for the Non-EGU Sector

Name of industrial boiler	Baseline heat input (mmBtu heat input)	Unadjusted allocation (tons)
R_x Chemical Unit 1	1,715,435	146
Write-a-lot Paper Boiler 1	400,094	34
Petro Oil Unit 1	874,120	75
Non-EGU Sector total:		255

The electric generating unit allocations add up together to 2880 allowances. However, the EGU sector budget is only 2722 tons. Each electric generating unit's allocation will need to be adjusted downward in proportion to each unit's share of the total allowances going to electric generating units, as described in the first example in the previous section II.D.

You can do calculations to determine the adjusted allocations for the industrial boilers in

the non-EGU sector. Note that in this sector, the unadjusted total allocation for the sector is less than the non-EGU sector budget; adjusting the allocations gives each source a larger adjusted allocation than unadjusted allocation. Here is the example calculation for Petro Oil Unit 1:

$$\text{Adjusted Allocation} = \left(\frac{75 \text{ tons}}{255 \text{ tons}}\right)[278 \text{ tons}] = 82 \text{ tons}$$

Here are the unadjusted and adjusted NO_X allowance allocations in the non-EGU sector:

NO_X Allowance Allocations for the Non-EGU Sector

Name of industrial boiler	Unadjusted allocation (tons)	Adjusted allocation (tons)
R_x Chemical Unit 1	146	159
Write-a-lot Paper Boiler 1	34	37
Petro Oil Unit 1	75	82
Non-EGU Sector total:	255	278

Note that in the example, if the State of Ecstacy had a 2% new source set-aside, then the number of allowances available for allocations would be 2% less. In that case, the number of allowances to go to the EGU sector would add up to 2668 tons (98% of 2722, rounded up) and the number of allowances for the non-EGU sector would add up to 272 tons (98% of 278 rounded down). In the formula above, these smaller tonnage values would be used as the "Sector Budget" when calculating the adjusted allowance allocations.

There is example rule language to support this approach in Case 1 of Appendix A to this document.

Allocation to all sources in trading program

Under the second approach, you would:

- Add up all unadjusted allocations for sources in the trading program.
- Divide the unadjusted allocation for each unit (or non-emitting generating system) in the trading program by the total adjusted allocations for all units (and non-emitting generating systems, if any) in the trading program.
- Multiply this fraction by the trading program budget.

For purposes of comparison, you can look at calculations for the same set of sources as in the example above.

Example. Adjusting allocations in the entire trading budget; some sources using heat input, some using output

The State of Ecstacy has an EGU sector budget of 2,722 tons and a non-EGU (industrial boiler) sector budget of 278 tons. The total State budget for sources in the trading program is 3000 tons. This State does not have any set-asides for new units or energy efficiency and renewable energy. The State's sources have the same unadjusted allocations as in the previous example. The total unadjusted allocations equal 2880 allowances (for EGUs) plus 255 allowances (for non-EGUs), for a total of 3135 unadjusted allowances.

Each source in the trading program will have its allocation adjusted downward by 4.3 percent, because the totalled unadjusted allocations are 4.3 percent greater than the trading program budget (budget of 3000÷total unadjusted allocations of 3135 = 0.957). Here is an example calculation for Squeaky Clean Cogen CT-1:

$$\text{Adjusted Allocation} = \left[\frac{\text{Unadjusted Allocation}}{\text{Trading Budget Unadjusted Allocation Total}}\right](\text{Trading Budget}) =$$

$$\left(\frac{154 \text{ tons}}{3135 \text{ tons}}\right)[3000 \text{ tons}] = 147 \text{ tons}$$

The adjusted allocations for all sources in the trading program in the State are in the table below:

NO_X Allowance Allocations for Trading Sources in Ecstacy

(Non-EGU allocations based on heat input)

Name of source	Unadjusted allocation (tons)	Adjusted allocation (tons)
Electric generating units		
Big Jolt Unit 1	1130	1081
Big Jolt Unit 2	301	288
Megawatt Station GT-1	111	106
Plentopower Unit 1	455	435
Plentopower Unit 2	729	698
Squeaky Clean Cogen CT-1	154	147
Industrial boilers		
R_x Chemical Unit 1	146	140
Write-a-lot Paper Boiler 1	34	33
Petro Oil Unit 1	75	72
Trading Budget total:	3135	3000

Note that in this second example, all of the sources had their allocations adjusted lower. However, the electric generating units' allocations did not need to be adjusted as much as in the first example. Thirty-three allowances have moved from the non-EGU sector to the EGU sector under this second approach. Here is a table that allows you to compare the differences for each unit.

NO_x Allowance Allocations for Trading Sources in Ecstacy, by Method for Adjustment

(Non-EGU allocations based on heat input)

Name of source	Adjusted allocation, adjusted by sector (tons)	Adjusted allocation, adjusted for entire trading budget (tons)
Electric generating units		
Big Jolt Unit 1	1068	1081
Big Jolt Unit 2	284	288
Megawatt Station GT-1	105	106
Plentopower Unit 1	430	435
Plentopower Unit 2	689	698
Squeaky Clean Cogen CT-1	146	147
EGU Sector subtotal:	2722	2755
Industrial boilers		
R_x Chemical Unit 1	159	140
Write-a-lot Paper Boiler 1	37	33
Petro Oil Unit 1	82	72
Non-EGU Sector subtotal:	278	245
Trading Budget total:	3000	3000

Why do allowances move from one sector to another? The two sectors were originally set assuming different control rates. By putting all sources in the same "pool" of allowances when you adjust the allocations, you are leveling some of that difference.

In addition, there will be some differences in individual unit allocations introduced by changing the electric generating unit allocations from a heat input basis to an output basis. These changes will vary depending on the efficiency of all units and how efficient a particular unit is compared to the average efficiency of all units.

III. What additional requirements will affected facilities need to meet in order to support updating output-based allocations?

A. What output measurement equipment must affected facilities use?

The vast majority of facilities already monitor their output, particularly electric generating facilities. Sources may not necessarily monitor output at a location that corresponds to the location where you want to allocate NO_X allowances. Most of the existing technologies for measuring output are capable of monitoring sufficiently accurately for basing NO_X allowance allocations on these data. See the discussion in section III.C., "How must affected facilities test and document the accuracy of their output measurement equipment?" for a discussion about monitoring technologies and their accuracy.

Where should output measurement equipment be installed?

This will depend on the type of output to be measure: gross or net, electric or thermal. There is a detailed discussion on where to measure output above in section I.E, "Should I base allocations on net output or gross output?"

Generally, electric generating units would measure gross electric generation, in MWh, directly off the electric generator terminals before any electricity is used internally at the plant. Industrial boilers would measure the gross thermal output, in $mmBtu_{out}$, that comes directly from the boiler header. Most electric generating units would measure net generation directly at the buss bar as the generation leaves the plant and goes to the grid. Most industrial boilers would measure net thermal output at a point after all steam used internally at the plant in the process of generating steam has been taken out after the boiler header.

For electric generating systems that are not fossil fuel-fired, they will measure electric output as described in this section for electric generating units.

In some cases, it may be easier for a source to monitor gross output than net generation, or vice versa. In such a case, you may consider letting the source use its existing output monitoring equipment and using a conservative factor to "convert" the type of output measured to the kind your State requires as the basis of allocations. For example, if your State requires monitoring of net output, you could allow a source to measure its gross output and multiply that value by 0.88 when reporting it. This corresponds to internal losses of 12 percent of energy

inside the plant, the highest that one would be likely to see. If your State requires monitoring of gross output, you could allow a source to measure net output and to report that. In either case, the source's baseline data will be smaller than if it monitored on the basis you specified, but the source gains flexibility in its monitoring requirements.

When must facilities start measuring output?

Sources would need to measure and record output-related information no later than May 1, 2002. This is necessary to support allowance allocations for the year 2006 that you would calculate and allocate in the year 2003.

B. What records must affected facilities keep and report to support output-based allocations?

Affected facilities that will receive an output-based allocation must keep records of the following information for at least three years from the date of the record's creation. At a minimum, sources will need this information for the ozone season.

Output information (to be kept on site)

For each electric generating unit that is a fossil fuel-fired units, or for each electric generating system that is not fossil fuel-fired, or for each plant:

- Keep hourly records of the gross and the net electric generation in MWe.

For each electric generation unit that cogenerates and for each industrial boiler or turbine that produces steam:

- Keep hourly records of the calculated thermal output, in $mmBtu_{out}$.
- Keep hourly records of the calculated enthalpy of vaporization, in $mmBtu_{out}$.
- Keep hourly records of the net and gross steam flow rate after steam has been diverted for generating any electricity, in thousands of pounds of steam per hour (klb/hr).
- Keep hourly pressure (psi) and temperature (°F) readings for any location that is not under saturated conditions.

Quality assurance and certification test data (to be kept on site)

- Describe the type of standard used to test the equipment, e.g., NIST traceable, ANSI 12.16, IEEE 57.13
- Results of the test, pass or fail.

- Date and time of test

Information that sources must report

We recommend that you require facilities that receive output-based allocations to report hourly data and totals for the ozone season for electric generation and thermal output. Companies should report this information for each location (unit or generating system) where the output is measured. You also could request the supporting data kept on site described above in this section. You also could decide if you want net output data, gross output data, or both.

C. How must affected facilities test and document the accuracy of their output measurement equipment?

Initial certification of accuracy

We suggest that sources send an initial certification of the accuracy of their output measurement equipment to their permitting authority no later than May 1, 2002. This will give sources time to verify the accuracy of their equipment before the data will be recorded that would be used to develop allowance allocations for the year 2006.

Any output measurement equipment used as a billing meter in commercial transactions does not require certification or testing. To qualify as a billing meter, the measurement device must be used to measure electric or thermal output for commercial billing under a contract. The facility where the measurement device is located must have different owners from the owners of the party purchasing the electric or thermal output. The billing meter must record the hourly electric or thermal output. Any electric or thermal output values that the facility reports must be the same as the values used in billing for the output.

Test specifications

Any equipment reading output must be capable of measuring to within 10.0 percent of a reference reading for that piece of equipment. Most of the existing technologies for measuring output are capable of reading to this level of accuracy.

Test procedures and standards

Here are existing consensus standards that include instructions for calibration or testing of equipment to measure steam flow or electricity. We suggest that sources follow these consensus standards, where possible.

Consensus Standards for Assuring Accuracy of Output Measurement Equipment

Equipment type	Number or name of standard
Electric generation	
Solid-state kilowatt meters	ANSI 12.16
Rotating kilowatt meter	ANSI 12.10
Electromechanical kilowatt meter	ANSI 12.10
Current transformers	IEEE 57.13 or ANSI C93.1
Potential transformers	IEEE 57.13 or ANSI C93.1
Steam	
Pressure taps	ASTM D1192-98 Standard Specification for Equipment for Sampling Water and Steam in Closed Conduits *{is this the correct standard?}*
Orifice plate	American Gas Association (AGA) Rpt. 3, American Society for Mechanical Engineering (ASME) MFC-3M for initial installation
Vortex meters	ASME MFC-6M
Turbine meters	ASME MFC-4M; AGA Rpt. 7
Water (condensate)	
Coriolis meters	ASME MFC-9M

Some of these methods require that the equipment be tested outside of the plant, or require that the generating system or unit not operate during the test. Obviously, this could be inconvenient for sources. It is reasonable to consider other alternative procedures for checking the accuracy of equipment that do not require removing equipment from the plant. Any alternative procedures would need to provide you with reasonable confidence that the equipment are reading to within 10.0 percent of the actual output provided by a reference reading.

In addition to the consensus standards for particular technologies, sources can check

various kinds of transmitters against standards traceable to the National Institute of Standards and Technology (NIST). (Examples: temperature or pressure transmitters) Section 2.1.6.1 of Appendix D of 40 CFR part 75 gives procedures for testing transmitters using NIST traceable standards.

Frequency of testing

Certain types of equipment only require an initial certification of calibration and do not require periodic recalibration unless the equipment are physically changed:

- potential transformers
- current transformers
- primary element of an orifice plate (However, the accompanying pressure and temperature transmitters will require periodic retesting.)

Any output measurement equipment used as a billing meter in commercial transactions should not need additional requirements for periodic quality assurance testing. A meter that is sufficiently accurate for commercial transactions should also be sufficiently accurate for providing data to support allocations.

For other types of equipment, we suggest that sources either recalibrate or reverify the meter accuracy at least once every two years (i.e., every eight calendar quarters), unless a consensus standard allows for less frequent calibrations or accuracy tests.

Consequences of failing a QA test

If testing a piece of output measurement equipment shows that the output readings are not accurate to 10.0 percent or less of the reference readings, then the source must retest the measurement equipment and meet that requirement. The data should be consider invalid, prospectively, for purposes of determining allocations. Data would remain invalid until the output measurement equipment passed an accuracy test or were replaced with another piece of equipment that passes the accuracy test. The source would need either:

- to omit the invalid data and report a lower output value, or

- to provide credible supporting data to substitute output data for after the test failure.

How to correct a test failure

The source must retest the measurement equipment and demonstrate that it is accurate to

10.0 percent or less of the reference readings, or else replace the failing equipment with other equipment that meets this accuracy specification.

Documentation

The source will need to keep the records described above in the previous section, "What records must affected facilities keep and report to support output-based allocations?".

D. What other monitoring requirements must facilities meet if they do not combust fossil fuel?

All facilities receiving output-based allocations must measure, quality-assure, record, and report information on output.

Sources combusting non-fossil fuels

If you include sources that combust non-fossil fuels, such as waste or wood, then you will need to add requirements for the owner or operator of those sources to monitor, record and report NO_X mass emissions and source operating information (e.g., hours of operation). A source emitting NO_X would have to account for its NO_X emissions if it is allocated NO_X allowances. Because it can be difficult to measure heat input and NO_X emission rate in lb/mmBtu from non-fossil fuels, you would need to specify that sources burning non-fossil fuels must monitor NO_X mass emissions using a flow monitor and a NO_X concentration system (see §75.71(a)(2)).

Facilities that do not emit NO_X

If you choose to allocate NO_X allowances to facilities or generating systems that do not emit NO_x, such as hydroelectric or nuclear power plants, they will need to measure, quality-assure, record, and report information on electric output. The discussions in sections III.A., III.B., and III.C. also apply to generating systems that are not fossil fuel-fired. In addition, these sources would need to keep records of hours of operation during the ozone season. (The discussion in section III.B. assumes that fossil fuel-fired units are already monitoring their hours of operation, as required by 40 CFR part 75.)

IV. How do I learn more about this guidance?

A. Who do I contact if I have questions about this guidance?

If you have questions about this guidance, contact Margaret Sheppard at EPA's Clean Air Markets Division[11] (Telephone: 202-564-9163; email: sheppard.margaret@epa.gov). If you have specific questions or suggestions related to output monitoring and reporting, contact either Margaret Sheppard or George Croll (Telephone: 202-564-0162; email: croll.george@epa.gov) at EPA's Clean Air Markets Division.

B. How do I find out more about the NO_X SIP Call and the NO_X Budget Trading Program?

EPA's information about the NO_X SIP call is available on the Regional Transport of Ozone website at http://www.epa.gov/ttn/rto/sip/index.html. This website includes a number of resources, including Federal Register notices, fact sheets, supporting technical work, emission inventories, and responses to frequently-asked questions. The Federal Register notice with the final NO_X SIP call is entitled "FR version of the 110 NOx SIP call -- Parts 1-4 (zipped)" and dated October 30, 1998.

If you have specific questions about the NO_X SIP call, you may contact Kimber Scavo of EPA's Office of Air Quality, Planning and Standards (Telephone: 919-541-3354; email: scavo.kimber@epa.gov). If you have specific questions concerning the NO_X Budget Trading Program, contact Sarah Dunham of the Clean Air Markets Division (Telephone: 202-564-9087; email: dunham.sarah@epa.gov). If you would like to know more about our review of the NO_X Budget Trading Program portion of your State implementation plan, contact Kathryn Petrillo of the Clean Air Markets Division (Telephone: 202-564-9093; email: petrillo.kathryn@epa.gov).

C. How did EPA create this guidance?

In the final NO_X SIP call, we committed to work together with stakeholders to design an output allocation system that could be used by States as part of their trading program rules in their SIPs. We said that we would develop a proposed system for output-based allocations in 1999 and finalize an output-based option in 2000. Today's draft guidance is the first step in developing the system for output-based allocations that we committed to in the NO_X SIP call.

[11]Formerly the Acid Rain Division.

EPA formed the Updating Output Emission Limitation Workgroup as a stakeholder workgroup to advise us in addressing issues to be covered in guidance to States. The Updating Output Emission Limitation Workgroup is a workgroup of the Clean Air, Energy and Climate Change Subcommittee of the Clean Air Act Advisory Committee. Workgroup members include representatives of the electric power industry, district energy groups, industrial boiler owners, the natural gas supply industry, environmental groups, State environmental agencies, labor unions, and other organizations. Beginning in December of 1998, we began a series of meetings and conference calls.

You can find information on the work of the Updating Output Emission Limitation Workgroup on the workgroup's webpage at http://www.epa.gov/acidrain/noxsip/workgrp.htm. On the website, you will find a list of workgroup members and their affiliations, lists of questions that we posed to the workgroup, responses by workgroup members, issue papers, and meeting minutes. Some of these documents are referred to in the guidance.

Appendix A: Sample rule language to account for output-based allocations

Note that throughout these examples, some phrases are in italics. These indicate possible decisions that you will need to make. For example, the definitions of "non-emitting generating system" and "unit" below will apply only if you intend to allocate to all sources of electric generation instead of to fossil fuel-fired units.

Definitions

"Electric output" means the electric generation (in MWh/time) from an electric generating device. With respect to a unit, "electric output" means the electric generation (in MWh/time) from an electric generating device served by the unit and that is attributed to the unit.

"Gross output" means the total output of energy from a process before making any deductions for energy output used in any way related to the production of energy through that process.

"Net output" means the final output of energy from a process after deducting any energy output consumed in any way related to generating energy through that process. Examples of output to be deducted include thermal output lost through radiation to the outside, thermal output used in thermal recovery, or thermal or electric output used within the plant to operate the unit, generator, fuel handling system, pumps, fans, or emission control equipment. Output used to produce a useful material product besides the thermal output or electric output, such as *{give an example}* does not need to be deducted.

{include this definition, if you intend to allocate NO_X allowances to all electricity generating systems}"Non-emitting generating system" means a system for generating electricity using an energy source that does not involve combusting fuel, such as hydroelectric, nuclear, geothermal, or wind power, and using an electric generator with a nameplate capacity greater than 25 MWe. No air pollutants are emitted while the generator generates electricity.

"NOx Budget unit" means a unit that is subject to the NOx Budget Trading Program emissions limitation under § 96.4 or § 96.80.

"Thermal output" means the thermal energy (in $mmBtu_{out}$/time) that is produced through a process and is used for industrial, commercial, heating, or cooling purposes after the subtraction

of heat for boiler feed or combustion air preheating or other heat recovery for combustion.

{revise the definition of "unit" to include all fuels, if you intend to allocate NO_X allowances to all electricity generating systems} "Unit" means a stationary boiler, combustion turbine, or combined cycle system that combusts fuel.

Measurements, abbreviations, and acronyms

MWh-megawatt electrical per hour

$mmBtu_{out}$–measured million British thermal units of thermal output

Subpart E - NOx Allowance Allocations

Note that throughout these examples, some phrases are in italics. These indicate possible decisions that you will need to make. For example, if you want to use net generation, substitute in the phrase "net" in each place where the example language states "*{specify net or gross}*."

Case 1

1. You initially allocate to both EGUs and non-EGUs for 2003 through 2005 based on heat input
2. You update allocations to EGUs based on output and to non-EGUs based on heat input beginning in 2006
3. You keep separate sector allocations for EGUs and non-EGUs

§ 96.42 NOx allowance allocations.

(a) *Basis for allocation.* The permitting authority will calculate NOx allowance allocations for each NOx Budget unit under § 96.4 [*or non-emitting generating system*] as follows:

(1) For a NOx allowance allocation for 2003 through 2005 under §96.41(a):

(i) The permitting authority will use the average of the two highest amounts of the unit's heat input (in mmBtu) for the control periods in 1995, 1996, and 1997 if the unit is under §96.4(a)(1), or the unit's heat input for the control period in 1995 if the unit is under §96.4(a)(2); or

(ii) For a unit that commences operation on or after May 1, 1997, the permitting authority will use the unit's heat input in accordance with paragraph (d) of this section.

(2) For a NOx allowance allocation for any year after 2005 under §96.41(b):

(i) The permitting authority will use the *{specify net or gross}* electric and thermal output for the unit under §96.4(a)(1) *[or the non-emitting generating system]*, and heat input for the unit under §96.4(a)(2) for the control period in the year that is four years before the year for which the NOx allocation is being calculated; or

(ii) For a unit *[or non-emitting generating system]* that commences operation on or after May 1 of the year that is four years before the year for which the permitting authority allocates, the permitting authority will determine allocations in accordance with paragraph (d) of this section.

(3) The permitting authority will determine the unit's heat input:

(i) In accordance with 40 CFR part 75; or

(ii) Based on the best available data reported to the permitting authority for the unit, if the unit was not otherwise subject to the requirements of 40 CFR part 75 for the control period.

(4) The permitting authority will determine the *{specify gross or net}* thermal and electric output for the unit [*or non-emitting generating system]* using {*insert source of data–e.g., net electric generation data from the Energy Information Administration, gross electric generation data in accordance with subpart H of 40 CFR part 75, or the best available data reported to the permitting authority for the unit or non-emitting generating system.}*

(b) *Allocation to units under §96.4(a)(1)[and non-emitting generating systems]*. For each control period in 2003 through 2005, the permitting authority will allocate NO_X allowances to all NOx Budget units under §96.4(a)(1) in [the State] *{substitute name of your State}* in accordance with paragraphs (b)(1) through (b)(3) of this section. For each control period after 2005, the Permitting authority will allocate NO_X allowances to all NOx Budget units under §96.4(a)(1) *[or non-emitting generating systems]* in [the State] *{substitute name of your State}* in accordance with paragraphs (b)(4) through (b)(6) of this section.

(1) For 2003 through 2005, the permitting authority will allocate NO_X allowances to all NOx Budget units under §96.4(a)(1) in [the State] *{substitute name of your State}* that commenced operation before May 1, 1997.

(2) For 2003 through 2005, the permitting authority will allocate NOx allowances to each NOx Budget unit under §96.4(a)(1) in an amount equaling 0.15 lb/mmBtu multiplied by the unit's heat input under paragraph (a) of this section, divided by 2,000 lb/ton. Each allocation will be rounded to the nearest whole number of NO_x allowances, as appropriate.

(3) The permitting authority will adjust the initial allocations under paragraph (b)(2) of this section so that the total number of NOx allowances allocated for 2003, 2004, or 2005 equals

95 percent of the number of tons of NOx emissions in the State trading program budget apportioned to units under §96.4(a)(1), if these numbers are not already equal. This adjustment will be made by: multiplying each unit's allocation for 2003, 2004, or 2005 by 95 percent of the number of tons of NOx emissions in the State trading program budget apportioned to units under §96.4(a)(1), dividing by the total number of NOx allowances allocated for the year under paragraph (b)(2) of this section, and rounding to the nearest whole number of NOx allowances, as appropriate.

(4) For each control period after 2005, the permitting authority will allocate NO_X allowances to all NOx Budget units under §96.4(a)(1) [*and to all non-emitting generating systems]* in [the State] *{substitute name of your State}* that commenced operation before May 1 of the period used to calculate *{specify net or gross}* electric and thermal output under paragraph (a)(2) of this section.

(5) For each control period after 2005, the permitting authority will allocate NOx allowances to each unit under §96.4(a)(1) *[and to each non-emitting generating system]* in an amount equaling: 1.5 lb/MWh multiplied by the *{specify net or gross}* electric output under paragraph (a) of this section and divided by 2,000 lb/ton, plus 0.21 lb/mmBtu$_{out}$ multiplied by the *{specify net or gross}* thermal output under paragraph (a) of this section and divided by 2,000 lb/ton. Each allocation will be rounded to the nearest whole number of NO_x allowances, as appropriate.

(6) The permitting authority will adjust the initial allocations under paragraph (b)(5) of this section so that the total number of NOx allowances allocated for each control period after 2005 equals 98 percent of the number of tons of NOx emissions in the State trading program budget apportioned to units under §96.4(a)(1), if these numbers are not already equal. This adjustment will be made by: multiplying each unit's allocation for a control period after 2005 by 98 percent of the number of tons of NOx emissions in the State trading program budget apportioned to units under §96.4(a)(1) divided by the total number of NOx allowances allocated under paragraph (b)(5) of this section, and rounding to the nearest whole number of NOx allowances, as appropriate.

(c) *Allocation to units under §96.4(a)(2).* For each control period under § 96.41, the

permitting authority will allocate NO_X allowances to all units under §96.4(a)(2) in [the State] *{insert name of State}* that commenced operation before May 1 of the period used to calculate heat input under paragraph (a) of this section. The permitting authority will allocate NOx allowances in accordance with the following procedures:

(1) The permitting authority will allocate NOx allowances to each NOx Budget unit under §96.4(a)(2) in an amount equaling 0.17 lb/mmBtu multiplied by the heat input under paragraph (a) of this section, divided by 2,000 lb/ton. Each allocation will be rounded to the nearest whole number of NO_x allowances, as appropriate

(2) The permitting authority will adjust the unadjusted allocations under paragraph (c)(1) of this section so that the total number of NOx allowances allocated equals 95 percent in 2003, 2004, and 2005, or 98 percent thereafter, of the number of tons of NOx emissions in the State trading program budget apportioned to units under §96.4(a)(2), if these numbers are not already equal. This adjustment will be made by: multiplying each unit's for a control period by 95 percent in 2003, 2004, or 2005, or by 98 percent thereafter, of the number of tons of NOx emissions in the State trading program budget apportioned to units under §96.4(a)(2), dividing by the total number of NOx allowances allocated under paragraph (c)(1) of this section, and rounding to the nearest whole number of NOx allowances, as appropriate.

(d) For each control period under § 96.41, the permitting authority will allocate NOx allowances to NOx Budget units under § 96.4 *[or non-emitting generating systems]* in [the State] *{insert name of your State}* that commenced operation, or are projected to commence operation, on or after May 1, 1997 (for allocations for 2003, 2004, or 2005) or on or after May 1 of the period used to calculate heat input or electric and thermal output under paragraph (a) of this section (for allocations for 2006 or thereafter), in accordance with the following procedures:

(1) The permitting authority will establish one allocation set-aside for each control period. Each allocation set-aside will be allocated NOx allowances equal to 5 percent in 2003, 2004, and 2005, or 2 percent thereafter, of the tons of NOx emissions in the State trading program budget, rounded to the nearest whole number of NOx allowances, as appropriate.

(2) The NOx authorized account representative of a unit *[or non-emitting generating system]* under paragraph (d) of this section may submit to the permitting authority a request, in

writing or in a format specified by the permitting authority, to be allocated NOx allowances for no more than five consecutive control periods under § 96.41, starting with the control period during which the unit *[or non-emitting generating system]* commenced, or is projected to commence, operation and ending with the control period preceding the control period for which it will receive an allocation under paragraph (b) or (c) of this section. The NOx allowance allocation request must be submitted prior to May 1 of the first control period for which the NOx allowance allocation is requested and after the date on which the permitting authority issues a permit to construct the unit *[or non-emitting generating system]*.

(3) In a NOx allowance allocation request under paragraph (d)(2) of this section, the NOx authorized account representative for a unit under §96.4(a)(1) *[or a non-emitting generating system]* may request NO_X allowances for a control period in the following amount:

(i) For a control period in 2003, 2004, or 2005, the requested number of NOx allowances must not exceed 0.15 lb/mmBtu, multiplied by the unit's maximum design heat input (in mmBtu/hr), multiplied by the number of hours remaining in the control period starting with the first day in the control period on which the unit operated or is projected to operate, and divided by 2,000 lb/ton.

(ii) For a control period in 2006 or thereafter, the requested number of NO_X allowances must not exceed 1.5 lb/MWh multiplied by the nameplate capacity (in MW) of the unit *[or non-emitting generating system]*, multiplied by the number of hours remaining in the control period starting with the first day in the control period on which the unit operated or is projected to operate, and divided by 2,000 lb/ton.

(4) In a NOx allowance allocation request under paragraph (d)(2) of this section, the NOx authorized account representative for a unit under §96.4(a)(2) may request NOx allowances for a control period. The requested number of NOx allowances must not exceed 0.17 lb/mmBtu multiplied by the unit's maximum design heat input (in mmBtu/hr), multiplied by the number of hours remaining in the control period starting with the first day in the control period on which the unit operated or is projected to operate, and divided by 2,000 lb/ton.

(5) The permitting authority will review, and allocate NOx allowances pursuant to, each NOx allowance allocation request under paragraph (d)(2) of this section in the order that the

request is received by the permitting authority.

(i) Upon receipt of the NOx allowance allocation request, the permitting authority will make any necessary adjustments to the request to ensure that, for a unit under §96.4(a)(1) *[or non-emitting generating system]*, the control period and the number of allowances specified are consistent with the requirements of paragraphs (d)(2) and (3) of this section and, for a unit under §96.4(a)(2), the control period and the number of allowances specified are consistent with the requirements of paragraphs (d)(2) and (4) of this section.

(ii) If the allocation set-aside for the control period for which NOx allowances are requested has an amount of NOx allowances not less than the number requested (as adjusted under paragraph (d)(5)(i) of this section), the permitting authority will allocate the amount of the NOx allowances requested (as adjusted under paragraph (d)(5)(i) of this section) to the unit *[or non-emitting generating system]*.

(iii) If the allocation set-aside for the control period for which NOx allowances are requested has a smaller amount of NOx allowances than the number requested (as adjusted under paragraph (d)(5)(i) of this section), the permitting authority will deny in part the request and allocate only the remaining number of NOx allowances in the allocation set-aside to the unit *[or non-emitting generating system]*.

(iv) Once an allocation set-aside for a control period has been depleted of all NOx allowances, the permitting authority will deny, and will not allocate any NOx allowances pursuant to, any NOx allowance allocation request under which NOx allowances have not already been allocated for the control period.

(6) Within 60 days of receipt of a NOx allowance allocation request, the permitting authority will take appropriate action under paragraph (d)(5) of this section and notify the NOx authorized account representative that submitted the request and the Administrator of the number of NOx allowances (if any) allocated for the control period to the unit *[or non-emitting generating system]*.

(e) For a unit *[or non-emitting generating system]* allocated NOx allowances under paragraph (d) of this section for a control period, the Administrator will deduct NOx allowances under § 96.54(b) or (e) to account for the actual utilization or output of the unit *[or non-emitting*

generating system] during the control period. The Administrator will calculate the number of NOx allowances to be deducted to account for the unit's actual utilization or output using the following formulas and rounding to the nearest whole number of NOx allowances as appropriate, provided that the number of NOx allowances to be deducted shall be zero if the number calculated is less than zero:

NOx allowances deducted for actual utilization for a unit under §96.4(a)(1) for a control period in 2003, 2004, or 2005 = (NOx allowances allocated for control period) - (Actual control period heat input x 0.15 lb/mmBtu ÷2,000 lb/ton);

NOx allowances deducted for actual output for a unit under §96.4(a)(1) *[or a non-emitting generating system]* for a control period in 2006 or thereafter = (Unit's NOx allowances allocated for control period) - (Unit's actual control period *{specify net or gross}* electric output x 1.5 lb/MWh ÷2,000 lb/ton and actual control period *{specify net or gross}* thermal output x 0.21 lb/mmBtu$_{out}$ ÷2,000 lb/ton); and

NOx allowances deducted for actual utilization for a unit under §96.4(a)(2)= (NOx allowances allocated for control period) - (Actual control period heat input x 0.17 lb/mmBtu ÷2,000 lb/ton) where:

"NOx allowances allocated for control period" is the number of NOx allowances allocated to the unit *[or the non-emitting generating system]* for the control period; and

"Actual control period heat input" is the heat input (in mmBtu) of the unit during the control period; and

"Actual control period *{specify net or gross}* electric output" is the *{specify net or gross}* electric output in MWh of the unit *[or non-emitting generating system]* during the control period; and

"Actual control period *{specify net or gross}* thermal output" is the *{specify net or gross}* thermal output in mmBtu$_{out}$ of the unit during the control period.

(f) After making the deductions for compliance under § 96.54(b) or (e) for a control period, the Administrator will notify the permitting authority whether any NOx allowances remain in the allocation set-aside for the control period. The permitting authority will allocate any such NOx allowances to the units under §96.4 *[and the non-emitting generating systems]* in

[the State] *{insert name of your State}* using the following formula and rounding to the nearest whole number of NOx allowances as appropriate:

Unit's *[or non-emitting generating system's]* share of NOx allowances remaining in allocation set-aside = Total NOx allowances remaining in allocation set-aside x (NOx allowance allocation ÷ State trading program budget excluding allocation set-aside)

where:

"Total NOx allowances remaining in allocation set-aside" is the total number of NOx allowances remaining in the allocation set-aside for the control period;

" NOx allowance allocation" is the number of NOx allowances allocated under paragraph (b) or (c) of this section to the unit *[or non-emitting generating system]* for the control period to which the allocation set-aside applies; and

"State trading program budget excluding allocation set-aside" is the State trading program budget for the control period to which the allocation set-aside applies multiplied by 95 percent if the control period is in 2003, 2004, or 2005 or 98 percent if the control period is in any year thereafter, rounded to the nearest whole number of NOx allowances as appropriate.

Case 2

1. You initially allocate to both EGUs and non-EGUs for 2003 through 2005 based on heat input
2. You update with allocations to both EGUs and non-EGUs based on output beginning in 2006
3. You keep separate sector allocations for EGUs and non-EGUs

§ 96.42 NOx allowance allocations.

(a) *Basis for allocation.* The permitting authority will calculate NOx allowance allocations for each NOx Budget unit under § 96.4 [*or non-emitting generating system*] as follows:

(1) For a NOx allowance allocation for 2003 through 2005 under §96.41(a):

(i) The permitting authority will use the average of the two highest amounts of the unit's heat input (in mmBtu) for the control periods in 1995, 1996, and 1997 if the unit is under §96.4(a)(1), or the unit's heat input for the control period in 1995 if the unit is under §96.4(a)(2); or

(ii) For a unit that commences operation on or after May 1, 1997, the permitting authority will use the unit's heat input in accordance with paragraph (d) of this section.

(2) For a NOx allowance allocation for any year after 2005 under §96.41(b):

(i) The permitting authority will use the *{specify net or gross}* electric and thermal output for the unit *[or the non-emitting generating system]* for the control period in the year that is four years before the year for which the NOx allocation is being calculated; or

(ii) For a unit *[or non-emitting generating system]* that commences operation on or after May 1 of the year that is four years before the year for which the permitting authority allocates, the permitting authority will determine allocations in accordance with paragraph (d) of this section.

(3) The permitting authority will determine the unit's heat input:

(i) In accordance with 40 CFR part 75; or

(ii) Based on the best available data reported to the permitting authority for the unit, if the

unit was not otherwise subject to the requirements of 40 CFR part 75 for the control period.

(4) The permitting authority will determine the *{specify gross or net}* thermal and electric output for the unit [*or the non-emitting generating system]* using {*insert source of data–e.g., net electric generation data from the Energy Information Administration, gross electric generation data in accordance with subpart H of 40 CFR part 75, or the best available data reported to the permitting authority for the unit [or the non-emitting generating system].}*

(b) *Allocation to units under §96.4(a)(1)[and non-emitting generating systems]*. For each control period in 2003 through 2005, the permitting authority will allocate NO_X allowances to all units under §96.4(a)(1) in [the State] *{substitute name of your State}* in accordance with paragraphs (b)(1) through (b)(3) of this section. For each control period after 2005, the permitting authority will allocate NO_X allowances to all NOx Budget units under §96.4(a)(1) *[or non-emitting generating systems]* in [the State] *{substitute name of your State}* in accordance with paragraphs (b)(4) through (b)(6) of this section.

(1) For 2003 through 2005, the permitting authority will allocate NO_X allowances to all NOx Budget units under §96.4(a)(1) in [the State] *{substitute name of your State}* that commenced operation before May 1, 1997.

(2) For 2003 through 2005, the permitting authority will allocate NOx allowances to each NOx Budget unit under §96.4(a)(1) in an amount equaling 0.15 lb/mmBtu multiplied by the unit's heat input under paragraph (a) of this section, divided by 2,000 lb/ton. Each allocation will be rounded to the nearest whole number of NO_x allowances, as appropriate.

(3) The permitting authority will adjust the initial allocations under paragraph (b)(2) of this section so that the total number of NOx allowances allocated for 2003, 2004, or 2005 equals 95 percent of the number of tons of NOx emissions in the State trading program budget apportioned to units under §96.4(a)(1), if these numbers are not already equal. This adjustment will be made by: multiplying each unit's allocation for 2003, 2004, or 2005 by 95 percent of the number of tons of NOx emissions in the State trading program budget apportioned to units under §96.4(a)(1), dividing by the total number of NOx allowances allocated for the year under paragraph (b)(2) of this section, and rounding to the nearest whole number of NOx allowances, as appropriate.

(4) For each control period after 2005, the permitting authority will allocate NO_X allowances to all NOx Budget units under §96.4(a)(1) [*and to all non-emitting generating systems]* in [the State] *{substitute name of your State}* that commenced operation before May 1 of the period used to calculate *{specify net or gross}* electric and thermal output under paragraph (a)(2) of this section.

(5) For each control period after 2005, the permitting authority will allocate NOx allowances to each unit under §96.4(a)(1) *[and to each non-emitting generating system]* in an amount equaling: 1.5 lb/MWh multiplied by the *{specify net or gross}* electric output under paragraph (a) of this section and divided by 2,000 lb/ton, plus 0.21 lb/mmBtu$_{out}$ multiplied by the *{specify net or gross}* thermal output under paragraph (a) of this section and divided by 2,000 lb/ton. Each allocation will be rounded to the nearest whole number of NO_x allowances, as appropriate.

(6) The permitting authority will adjust the initial allocations under paragraph (b)(5) of this section so that the total number of NOx allowances allocated for each control period after 2005 equals 98 percent of the number of tons of NOx emissions in the State trading program budget apportioned to units under §96.4(a)(1), if these numbers are not already equal. This adjustment will be made by: multiplying each unit's allocation for a control period after 2005 by 98 percent of the number of tons of NOx emissions in the State trading program budget apportioned to units under §96.4(a)(1) divided by the total number of NOx allowances allocated under paragraph (b)(5) of this section, and rounding to the nearest whole number of NOx allowances, as appropriate.

(c) *Allocation to units under §96.4(a)(2).* For each control period in 2003 through 2005, the permitting authority will allocate NO_X allowances to all units under §96.4(a)(2) in [the State] *{substitute name of your State}* in accordance with paragraphs (c)(1) through (c)(3) of this section. For each control period after 2005, the permitting authority will allocate NO_X allowances to all NOx Budget units under §96.4(a)(1) *[or non-emitting generating systems]* in [the State] *{substitute name of your State}* in accordance with paragraphs (c)(4) through (c)(6) of this section.

(1) For 2003 through 2005, the Department will allocate NO_X allowances to all NOx

Budget units under §96.4(a)(2) *[non-electric generating units]* in [the State] *{substitute name of your State}* that commenced operation before May 1, 1997.

(2) For 2003 through 2005, the permitting authority will allocate NOx allowances to each NOx Budget unit under §96.4(a)(2) in an amount equaling 0.17 lb/mmBtu multiplied by the heat input under paragraph (a) of this section, divided by 2,000 lb/ton. Each allocation will be rounded to the nearest whole number of NO_x allowances, as appropriate

(3) For 2003 through 2005, the permitting authority will adjust the unadjusted allocations under paragraph (c)(2) of this section so that the total number of NOx allowances allocated equals 95 percent in 2003, 2004, OR 2005, or 98 percent thereafter, of the number of tons of NOx emissions in the State trading program budget apportioned to units under §96.4(a)(2), if these numbers are not already equal. This adjustment will be made by: multiplying each unit's allocation in 2003, 2004, or 2005 by 95 percent of the number of tons of NOx emissions in the State trading program budget apportioned to units under §96.4(a)(2), dividing by the total number of NOx allowances allocated under paragraph (c)(2) of this section, and rounding to the nearest whole number of NOx allowances, as appropriate.

(4) For each control period after the year 2005, the permitting authority will allocate NO_X allowances to all NOx Budget units under §96.4(a)(1) [*and to all non-emitting generating systems]* in [the State] *{substitute name of your State}* that commenced operation before May 1 of the period used to calculate *{specify net or gross}* electric and thermal output under paragraph (a)(2) of this section.

(5) For each control period after 2005, the permitting authority will allocate NOx allowances to each unit under §96.4(a)(2) in an amount equaling: 0.21 lb/mmBtu$_{out}$ multiplied by the *{specify net or gross}* thermal output under paragraph (a) of this section and divided by 2,000 lb/ton, plus 1.5 lb/MWh multiplied by the *{specify net or gross}* electric output under paragraph (a) of this section and divided by 2,000 lb/ton. Each allocation will be rounded to the nearest whole number of NO_x allowances, as appropriate.

(6) The permitting authority will adjust the initial allocations under paragraph (c)(5) of this section so that the total number of NOx allowances allocated for each control period after 2005 equals 98 percent of the number of tons of NOx emissions in the State trading program

budget apportioned to units under §96.4(a)(2), if these numbers are not already equal. This adjustment will be made by: multiplying each unit's allocation for a control period after 2005 by 98 percent of the number of tons of NOx emissions in the State trading program budget apportioned to units under §96.4(a)(2) and dividing by the total number of NOx allowances allocated under paragraph (c)(5) of this section, and rounding to the nearest whole number of NOx allowances, as appropriate.

(d) For each control period under § 96.41, the permitting authority will allocate NOx allowances to NOx Budget units under § 96.4 *[or non-emitting generating systems]* in [the State] *{insert name of your State}* that commenced operation, or are projected to commence operation, on or after May 1, 1997 (for allocations for 2003, 2004, or 2005) or on or after May 1 of the period used to calculate heat input or electric and thermal output under paragraph (a) of this section (for allocations for 2006 or thereafter), in accordance with the following procedures:

(1) The permitting authority will establish one allocation set-aside for each control period. Each allocation set-aside will be allocated NOx allowances equal to 5 percent in 2003, 2004, and 2005, or 2 percent thereafter, of the tons of NOx emissions in the State trading program budget, rounded to the nearest whole number of NOx allowances, as appropriate.

(2) The NOx authorized account representative of a unit *[or non-emitting generating system]* under paragraph (d) of this section may submit to the permitting authority a request, in writing or in a format specified by the permitting authority, to be allocated NOx allowances for no more than five consecutive control periods under § 96.41, starting with the control period during which the unit *[or non-emitting generating system]* commenced, or is projected to commence, operation and ending with the control period preceding the control period for which it will receive an allocation under paragraph (b) or (c) of this section. The NOx allowance allocation request must be submitted prior to May 1 of the first control period for which the NOx allowance allocation is requested and after the date on which the permitting authority issues a permit to construct the unit *[or non-emitting generating system]*.

(3) In a NOx allowance allocation request under paragraph (d)(2) of this section, the NOx authorized account representative for a unit under §96.4(a)(1) *[or a non-emitting generating system]* may request NO_X allowances for a control period in the following amount:

(i) For a control period in 2003, 2004, or 2005, the requested number of NOx allowances must not exceed 0.15 lb/mmBtu, multiplied by the unit's maximum design heat input (in mmBtu/hr), multiplied by the number of hours remaining in the control period starting with the first day in the control period on which the unit operated or is projected to operate, and divided by 2,000 lb/ton.

(ii) For a control period in 2006 or thereafter, the requested number of NO_X allowances must not exceed 1.5 lb/MWh multiplied by the nameplate capacity (in MW) of the unit *[or non-emitting generating system]*, multiplied by the number of hours remaining in the control period starting with the first day in the control period on which the unit operated or is projected to operate, and divided by 2,000 lb/ton.

(4) In a NOx allowance allocation request under paragraph (d)(2) of this section, the NOx authorized account representative for a unit under §96.4(a)(2) may request NOx allowances for a control period in the following amount:

(i) For a control period in 2003, 2004, or 2005, the requested number of NOx allowances must not exceed 0.17 lb/mmBtu multiplied by the unit's maximum design heat input (in mmBtu/hr), multiplied by the number of hours remaining in the control period starting with the first day in the control period on which the unit operated or is projected to operate, and divided by 2,000 lb/ton.

(ii) For a control period in 2006 or thereafter, the requested number of NO_X allowances must not exceed 0.21 lb/mmBtu, multiplied by the maximum design heat input of the unit(in mmBtu/hr), divided by an efficiency factor of 0.80, multiplied by the number of hours remaining in the control period starting with the first day in the control period on which the unit operated or is projected to operate, and divided by 2,000 lb/ton.

(5) The permitting authority will review, and allocate NOx allowances pursuant to, each NOx allowance allocation request under paragraph (d)(2) of this section in the order that the request is received by the permitting authority.

(i) Upon receipt of the NOx allowance allocation request, the permitting authority will make any necessary adjustments to the request to ensure that, for a unit under §96.4(a)(1) *[or non-emitting generating system]*, the control period and the number of allowances specified are

consistent with the requirements of paragraphs (d)(2) and (3) of this section and, for a unit under §96.4(a)(2), the control period and the number of allowances specified are consistent with the requirements of paragraphs (d)(2) and (4) of this section.

(ii) If the allocation set-aside for the control period for which NOx allowances are requested has an amount of NOx allowances not less than the number requested (as adjusted under paragraph (d)(5)(i) of this section), the permitting authority will allocate the amount of the NOx allowances requested (as adjusted under paragraph (d)(5)(i) of this section) to the unit *[or non-emitting generating system]*.

(iii) If the allocation set-aside for the control period for which NOx allowances are requested has a smaller amount of NOx allowances than the number requested (as adjusted under paragraph (d)(5)(i) of this section), the permitting authority will deny in part the request and allocate only the remaining number of NOx allowances in the allocation set-aside to the unit *[or non-emitting generating system]*.

(iv) Once an allocation set-aside for a control period has been depleted of all NOx allowances, the permitting authority will deny, and will not allocate any NOx allowances pursuant to, any NOx allowance allocation request under which NOx allowances have not already been allocated for the control period.

(6) Within 60 days of receipt of a NOx allowance allocation request, the permitting authority will take appropriate action under paragraph (d)(5) of this section and notify the NOx authorized account representative that submitted the request and the Administrator of the number of NOx allowances (if any) allocated for the control period to the unit *[or non-emitting generating system]*.

(e) For a unit *[or non-emitting generating system]* allocated NOx allowances under paragraph (d) of this section for a control period, the Administrator will deduct NOx allowances under § 96.54(b) or (e) to account for the actual utilization or output of the unit *[or non-emitting generating system]* during the control period. The Administrator will calculate the number of NOx allowances to be deducted to account for the unit's actual utilization or output using the following formulas and rounding to the nearest whole number of NOx allowances as appropriate, provided that the number of NOx allowances to be deducted shall be zero if the number

calculated is less than zero:

NOx allowances deducted for actual utilization for a unit under §96.4(a)(1) for a control period in 2003, 2004, or 2005 = (NOx allowances allocated for control period) - (Actual control period heat input x 0.15 lb/mmBtu ÷2,000 lb/ton);

NOx allowances deducted for actual output for a unit under §96.4(a)(1) *[or a non-emitting generating system]* for a control period in 2006 or thereafter = (Unit's NOx allowances allocated for control period) - (Unit's actual control period *{specify net or gross}* electric output x 1.5 lb/MWh ÷2,000 lb/ton and actual control period *{specify net or gross}* thermal output x 0.21 lb/mmBtu$_{out}$ ÷2,000 lb/ton); and

NOx allowances deducted for actual utilization for a unit under §96.4(a)(2) in 2003, 2004, or 2005= (NOx allowances allocated for control period) - (Actual control period heat input x 0.17 lb/mmBtu ÷2,000 lb/ton); and

NOx allowances deducted for actual output for a unit under §96.4(a)(2) for a control period in 2006 or thereafter= (NOx allowances allocated for control period) - (Actual control period *{specify net or gross}* thermal output x 0.21 lb/mmBtu ÷2,000 lb/ton and actual control period *{specify net or gross}* electric output x 1.5 lb/MWh ÷ 2,000 lb/ton)

where:

"NOx allowances allocated for control period" is the number of NOx allowances allocated to the unit *[or the non-emitting generating system]* for the control period; and

"Actual control period heat input" is the heat input (in mmBtu) of the unit during the control period; and

"Actual control period *{specify net or gross}* electric output" is the *{specify net or gross}* electric output in MWh of the unit *[or non-emitting generating system]* during the control period; and

"Actual control period *{specify net or gross}* thermal output" is the *{specify net or gross}* thermal output in mmBtu$_{out}$ of the unit during the control period.

(f) After making the deductions for compliance under § 96.54(b) or (e) for a control period, the Administrator will notify the permitting authority whether any NOx allowances remain in the allocation set-aside for the control period. The permitting authority will allocate

any such NOx allowances to the units under §96.4 *[and the non-emitting generating systems]* in [the State] *{insert name of your State}* using the following formula and rounding to the nearest whole number of NOx allowances as appropriate:

Unit's *[or non-emitting generating system's]* share of NOx allowances remaining in allocation set-aside = Total NOx allowances remaining in allocation set-aside x (NOx allowance allocation ÷ State trading program budget excluding allocation set-aside)

where:

"Total NOx allowances remaining in allocation set-aside" is the total number of NOx allowances remaining in the allocation set-aside for the control period;

" NOx allowance allocation" is the number of NOx allowances allocated under paragraph (b) or (c) of this section to the unit *[or non-emitting generating system]* for the control period to which the allocation set-aside applies; and

"State trading program budget excluding allocation set-aside" is the State trading program budget for the control period to which the allocation set-aside applies multiplied by 95 percent if the control period is in 2003, 2004, or 2005 or 98 percent if the control period is in any year thereafter, rounded to the nearest whole number of NOx allowances as appropriate.

Case 3

1. You initially allocate to both EGUs and non-EGUs for 2003 through 2005 based on heat input
2. You update with allocations to both EGUs and non-EGUs based on output beginning in 2006
3. You use one trading program budget for both EGUs and non-EGUs

§ 96.42 NOx allowance allocations.

(a) *Basis for allocation.* The permitting authority will calculate NOx allowance allocations for each NOx Budget unit under § 96.4 [*or non-emitting generating system*] as follows:

(1) For a NOx allowance allocation for 2003 through 2005 under §96.41(a):

(i) The permitting authority will use the average of the two highest amounts of the unit's heat input (in mmBtu) for the control periods in 1995, 1996, and 1997 if the unit is under §96.4(a)(1), or the unit's heat input for the control period in 1995 if the unit is under §96.4(a)(2); or

(ii) For a unit that commences operation on or after May 1, 1997, the permitting authority will use the unit's heat input in accordance with paragraph (c) of this section.

(2) For a NOx allowance allocation for any year after 2005 under §96.41(b):

(i) The permitting authority will use the *{specify net or gross}* electric and thermal output for the unit *[or the non-emitting generating system]* for the control period in the year that is four years before the year for which the NOx allocation is being calculated; or

(ii) For a unit *[or non-emitting generating system]* that commences operation on or after May 1 of the year that is four years before the year for which the permitting authority allocates, the permitting authority will determine allocations in accordance with paragraph (c) of this section.

(3) The permitting authority will determine the unit's heat input:

(i) In accordance with 40 CFR part 75; or

(ii) Based on the best available data reported to the permitting authority for the unit, if the

unit was not otherwise subject to the requirements of 40 CFR part 75 for the control period.

(4) The permitting authority will determine the *{specify gross or net}* thermal and electric output for the unit [*or the non-emitting generating system]* using {*insert source of data–e.g., net electric generation data from the Energy Information Administration, gross electric generation data in accordance with subpart H of 40 CFR part 75, or the best available data reported to the permitting authority for the unit [or the non-emitting generating system].}* .

(b) For each control period in 2003 through 2005, the Department will allocate NO_X allowances to all NOx Budget units in [the State] *{substitute name of your State}* in accordance with paragraphs (b)(1) through (b)(3) of this section. For each control period after 2005, the Department will allocation NO_X allowances to all NOx Budget units *{or non-emitting generating systems}* in [the State] *{substitute name of your State}* in accordance with paragraphs (b)(4) through (b)(6) of this section.

(1) For 2003 through 2005, the Department will allocate NO_X allowances to all NOx Budget units in [the State] *{substitute name of your State}* that commenced operation before May 1, 1997.

(2) For 2003 through 2005, the Department will allocate NOx allowances to each NOx Budget unit under §96.4(a)(1) in an amount equaling 0.15 lb/mmBtu multiplied by the heat input under paragraph (a) of this section, divided by 2,000 lb/ton. For the years 2003 through 2005, the Department will allocate NOx allowances to each NOx Budget unit under §96.4(a)(2) in an amount equaling 0.17 lb/mmBtu multiplied by the heat input under paragraph (a) of this section, divided by 2,000 lb/ton. Each allocation will be rounded to the nearest whole number of NO_x allowances, as appropriate.

(3) The Department will adjust the initial allocations under paragraph (b)(2) of this section so that the total number of NOx allowances allocated for 2003, 2004, or 2005 equals 95 percent of the number of tons of NOx emissions in the State trading program budget if these numbers are not already equal. This adjustment will be made by: multiplying each unit's allocation in 2003, 2004, or 2005 by 95 percent of the number of tons of NOx emissions in the State trading program budget divided by the total number of NOx allowances allocated under paragraph (b)(2) of this section, and rounding to the nearest whole number of NOx allowances,

as appropriate.

(4) For each control period after 2005, the Department will allocate NO_X allowances to all NOx Budget units *[and to all non-emitting generating systems]* in [the State] *{substitute name of your State}* that commenced operation before May 1 of the period used to calculate *{specify net or gross}* electric and thermal output under paragraph (a)(2) of this section.

(5) For each control period after 2005, the Department will allocate NOx allowances to each NOx Budget unit *[and to each non-emitting generating system*] in an amount equaling: 1.5 lb/MWh multiplied by the *{specify net or gross}* electric output under paragraph (a) of this section and divided by 2,000 lb/ton, plus 0.21 lb/mmBtu$_{out}$ multiplied by the *{specify net or gross}* thermal output under paragraph (a) of this section, and divided by 2,000 lb/ton. Each allocation will be rounded to the nearest whole number of NO_x allowances.

(6) The Department will adjust the initial allocations under paragraph (b)(5) of this section so that the total number of NOx allowances allocated for each control period after 2005 equals 98 percent of the number of tons of NOx emissions in the State trading program budget, if these numbers are not already equal. This adjustment will be made by: multiplying each unit's allocation for a control period after 2005 by 98 percent of the number of tons of NOx emissions in the State trading program budget, dividing by the total number of NOx allowances allocated under paragraph (b)(5) of this section, and rounding to the nearest whole number of NOx allowances, as appropriate.

(c) For each control period under § 96.41, the permitting authority will allocate NOx allowances to NOx Budget units under § 96.4 *[or non-emitting generating systems]* in [the State] *{insert name of your State}* that commenced operation, or are projected to commence operation, on or after May 1, 1997 (for allocations for 2003, 2004, or 2005) or on or after May 1 of the period used to calculate heat input or electric and thermal output under paragraph (a) of this section (for allocations for 2006 or thereafter), in accordance with the following procedures:

(1) The permitting authority will establish one allocation set-aside for each control period. Each allocation set-aside will be allocated NOx allowances equal to 5 percent in 2003, 2004, and 2005, or 2 percent thereafter, of the tons of NOx emissions in the State trading program budget, rounded to the nearest whole number of NOx allowances, as appropriate.

(2) The NOx authorized account representative of a unit *[or non-emitting generating system]* under paragraph (c) of this section may submit to the permitting authority a request, in writing or in a format specified by the permitting authority, to be allocated NOx allowances for no more than five consecutive control periods under § 96.41, starting with the control period during which the unit *[or non-emitting generating system]* commenced, or is projected to commence, operation and ending with the control period preceding the control period for which it will receive an allocation under paragraph (b) of this section. The NOx allowance allocation request must be submitted prior to May 1 of the first control period for which the NOx allowance allocation is requested and after the date on which the permitting authority issues a permit to construct the unit *[or non-emitting generating system]*.

(3) In a NOx allowance allocation request under paragraph (c)(2) of this section, the NOx authorized account representative for a unit under §96.4(a)(1) *[or a non-emitting generating system]* may request NO_X allowances for a control period in the following amount:

(i) For a control period in 2003, 2004, or 2005, the requested number of NOx allowances must not exceed 0.15 lb/mmBtu, multiplied by the unit's maximum design heat input (in mmBtu/hr), multiplied by the number of hours remaining in the control period starting with the first day in the control period on which the unit operated or is projected to operate, and divided by 2,000 lb/ton.

(ii) For a control period in 2006 or thereafter, the requested number of NO_X allowances must not exceed 1.5 lb/MWh multiplied by the nameplate capacity (in MW) of the unit *[or non-emitting generating system]*, multiplied by the number of hours remaining in the control period starting with the first day in the control period on which the unit operated or is projected to operate, and divided by 2,000 lb/ton.

(4) In a NOx allowance allocation request under paragraph (c)(2) of this section, the NOx authorized account representative for a unit under §96.4(a)(2) may request NOx allowances for a control period in the following amount:

(i) For a control period in 2003, 2004, or 2005, the requested number of NOx allowances must not exceed 0.17 lb/mmBtu multiplied by the unit's maximum design heat input (in mmBtu/hr), multiplied by the number of hours remaining in the control period starting with the

first day in the control period on which the unit operated or is projected to operate, and divided by 2,000 lb/ton.

(ii) For a control period in 2006 or thereafter, the requested number of NO_X allowances must not exceed 0.21 lb/mmBtu, multiplied by the maximum design heat input of the unit(in mmBtu/hr), divided by an efficiency factor of 0.80, multiplied by the number of hours remaining in the control period starting with the first day in the control period on which the unit operated or is projected to operate, and divided by 2,000 lb/ton.

(5) The permitting authority will review, and allocate NOx allowances pursuant to, each NOx allowance allocation request under paragraph (c)(2) of this section in the order that the request is received by the permitting authority.

(i) Upon receipt of the NOx allowance allocation request, the permitting authority will make any necessary adjustments to the request to ensure that, for a unit under §96.4(a)(1) *[or non-emitting generating system]*, the control period and the number of allowances specified are consistent with the requirements of paragraphs (c)(2) and (3) of this section and, for a unit under §96.4(a)(2), the control period and the number of allowances specified are consistent with the requirements of paragraphs (c)(2) and (4) of this section.

(ii) If the allocation set-aside for the control period for which NOx allowances are requested has an amount of NOx allowances not less than the number requested (as adjusted under paragraph (c)(5)(i) of this section), the permitting authority will allocate the amount of the NOx allowances requested (as adjusted under paragraph (c)(5)(i) of this section) to the unit *[or non-emitting generating system]*.

(iii) If the allocation set-aside for the control period for which NOx allowances are requested has a smaller amount of NOx allowances than the number requested (as adjusted under paragraph (c)(5)(i) of this section), the permitting authority will deny in part the request and allocate only the remaining number of NOx allowances in the allocation set-aside to the unit *[or non-emitting generating system]*.

(iv) Once an allocation set-aside for a control period has been depleted of all NOx allowances, the permitting authority will deny, and will not allocate any NOx allowances pursuant to, any NOx allowance allocation request under which NOx allowances have not

already been allocated for the control period.

(6) Within 60 days of receipt of a NOx allowance allocation request, the permitting authority will take appropriate action under paragraph (c)(5) of this section and notify the NOx authorized account representative that submitted the request and the Administrator of the number of NOx allowances (if any) allocated for the control period to the unit *[or non-emitting generating system]*.

(d) For a unit *[or non-emitting generating system]* allocated NOx allowances under paragraph (c) of this section for a control period, the Administrator will deduct NOx allowances under § 96.54(b) or (e) to account for the actual utilization or output of the unit *[or non-emitting generating system]* during the control period. The Administrator will calculate the number of NOx allowances to be deducted to account for the unit's actual utilization or output using the following formulas and rounding to the nearest whole number of NOx allowances as appropriate, provided that the number of NOx allowances to be deducted shall be zero if the number calculated is less than zero:

NOx allowances deducted for actual utilization for a unit under §96.4(a)(1) for a control period in 2003, 2004, or 2005 = (NOx allowances allocated for control period) - (Actual control period heat input x 0.15 lb/mmBtu ÷2,000 lb/ton);

NOx allowances deducted for actual output for a unit under §96.4(a)(1) *[or a non-emitting generating system]* for a control period in 2006 or thereafter = (Unit's NOx allowances allocated for control period) - (Unit's actual control period *{specify net or gross}* electric output x 1.5 lb/MWh ÷2,000 lb/ton and actual control period *{specify net or gross}* thermal output x 0.21 $lb/mmBtu_{out}$ ÷2,000 lb/ton); and

NOx allowances deducted for actual utilization for a unit under §96.4(a)(2) in 2003, 2004, or 2005= (NOx allowances allocated for control period) - (Actual control period heat input x 0.17 lb/mmBtu ÷2,000 lb/ton); and

NOx allowances deducted for actual output for a unit under §96.4(a)(2) for a control period in 2006 or thereafter= (NOx allowances allocated for control period) - (Actual control period *{specify net or gross}* thermal output x 0.21 lb/mmBtu ÷2,000 lb/ton and actual control period *{specify net or gross}* electric output x 1.5 lb/MWh ÷ 2,000 lb/ton)

where:

"NOx allowances allocated for control period" is the number of NOx allowances allocated to the unit *[or the non-emitting generating system]* for the control period; and

"Actual control period heat input" is the heat input (in mmBtu) of the unit during the control period; and

"Actual control period *{specify net or gross}* electric output" is the *{specify net or gross}* electric output in MWh of the unit *[or non-emitting generating system]* during the control period; and

"Actual control period *{specify net or gross}* thermal output" is the *{specify net or gross}* thermal output in $mmBtu_{out}$ of the unit during the control period.

(e) After making the deductions for compliance under § 96.54(b) or (e) for a control period, the Administrator will notify the permitting authority whether any NOx allowances remain in the allocation set-aside for the control period. The permitting authority will allocate any such NOx allowances to the units under §96.4 *[and the non-emitting generating systems]* in [the State] *{insert name of your State}* using the following formula and rounding to the nearest whole number of NOx allowances as appropriate:

Unit's *[or non-emitting generating system's]* share of NOx allowances remaining in allocation set-aside = Total NOx allowances remaining in allocation set-aside x (NOx allowance allocation ÷ State trading program budget excluding allocation set-aside)

where:

"Total NOx allowances remaining in allocation set-aside" is the total number of NOx allowances remaining in the allocation set-aside for the control period;

" NOx allowance allocation" is the number of NOx allowances allocated under paragraph (b) of this section to the unit *[or non-emitting generating system]* for the control period to which the allocation set-aside applies; and

"State trading program budget excluding allocation set-aside" is the State trading program budget for the control period to which the allocation set-aside applies multiplied by 95 percent if the control period is in 2003, 2004, or 2005 or 98 percent if the control period is in any year thereafter, rounded to the nearest whole number of NOx allowances as appropriate.

Language related to monitoring and subpart H of part 96

Note: This language is preliminary. We expect to add further detail. Most of the changes in this section are intended to account for the case where you include all sources of generation. We request your comments on the appropriate monitoring and reporting requirements for output.

Subpart H - Monitoring and Reporting

§ 96.70 General Requirements.

The owners and operators, and to the extent applicable, the NOx authorized account representative of a NOx Budget unit *[or a non-emitting generating system allocated* NO_X *allowances under §96.42*], shall comply with the monitoring and reporting requirements as provided in this subpart and in subpart H of part 75 of this chapter. For purposes of complying with such requirements, the definitions in § 96.2 and in § 72.2 of this chapter shall apply, and the terms "affected unit," "designated representative," and "continuous emission monitoring system" (or "CEMS") in part 75 of this chapter shall be replaced by the terms "NOx Budget unit," "NOx authorized account representative," and "continuous emission monitoring system" (or "CEMS"), respectively, as defined in § 96.2.

(a) Requirements for installation, certification, and data accounting.

(1) The owner or operator of each NOx Budget unit must meet the following requirements. These provisions also apply to a unit for which an application for a NOx Budget opt-in permit is submitted and not denied or withdrawn, as provided in subpart I of this part:

(i) Install all monitoring systems required under this subpart for monitoring NOx mass. *[For* NO_X *Budget units that are fossil fuel-fired*], this includes all systems required to monitor NOx emission rate, NOx concentration, heat input, and flow, in accordance with §§ 75.72 and 75.76. [*For* NO_X *Budget units that are not fossil fuel-fired, this includes all systems required to monitor NOx concentration and flow, in accordance with §§ 75.72 and 75.76, and the owner or operator shall not monitor for heat input or for* NO_X *emission rate in lb/mmBtu.]*

(ii) Install all monitoring systems for monitoring heat input *for units that are fossil-fuel fired. Install all monitoring systems for monitoring electric or thermal output. [If non-EGUs*

receive allowances based on heat input only and EGUs receive allowances based on output, then add "for units under §96.4(a)(1)" at the end of this sentence.]

(iii) Successfully complete all certification tests required under § 96.71 and meet all other provisions of this subpart and 40 CFR part 75 applicable to the monitoring systems under paragraphs (a)(1)(i) and (ii) of this section.

(iv) Record, and report data from the monitoring systems under paragraphs (a)(1)(i) and (ii) of this section.

(2) The owner or operator of each non-emitting generating system that does not emit NOx must meet the following requirements:

(i) Install all monitoring systems for monitoring electric output.

(ii) Successfully complete all certification tests required under § 96.71 and meet all other provisions of this subpart applicable to the monitoring systems under paragraphs (a)(2)(i) of this section.

(iii) Record, and report data from the monitoring systems under paragraphs (a)(2)(i) of this section .

* * * * *

{rest of section 96.70 remains the same}

{*requirements of sections 96.71, 96.72, and 96.73 remain the same}*

§ 96.74 Recordkeeping and reporting.

(a) General provisions

(1) The NOx authorized account representative shall comply with all recordkeeping and reporting requirements in this section and with the requirements of § 96.10(e), except as provided below in paragraph (a)(4) of this section.

(2) If the NOx authorized account representative for a NOx Budget unit subject to an Acid Rain emission limitation who signed and certified any submission that is made under subpart F or G of 40 CFR part 75 and which includes data and information required under this subpart or subpart H of 40 CFR part 75 is not the same person as the designated representative or the alternative designated representative for the unit under 40 CFR part 72, the submission must

also be signed by the designated representative or the alternative designated representative.

(3) The NO_X authorized account representative for a non-emitting generating system shall report the following information to the permitting authority for each control period no later than 30 days after the end of the control period:

(i) {specify net or gross} electric output for the control period, in MWh;

(ii) {specify net or gross} electric output, in MWh, for each hour the generating system generates electricity;

{insert other data, if any, you want reported}

(4) The NO_X authorized account representative shall report the following information to the permitting authority for each *{specify unit, non-emitting generating system, or other level}* for each control period no later than 30 days after the end of the control period:

(i) electric output for the control period, in MWh, if applicable;

(ii) thermal output not used to generate electricity during the control period, in mmBtu output, if applicable;

{insert other data, if any, you want reported}

* * * * *

{rest of section 96.74 remains the same}

{*section 96.75 remains the same}*

{*section 96.76 remains the same}*

Appendix B: Glossary of terms used in this guidance

add-on emission controls –a pollution reduction control technology that operates independent of the combustion process. Examples: selective catalytic reduction, scrubber

adjusted allocation–an allocation that has been increased or decreased in proportion to a unit, source or generator's share of all operation from a group of units or sources with a budget. For example, an electric generating unit's initial allocation could be increased if the sum of the initial allocations for all units in the EGU sector was less than the budget for the EGU sector. Each unit would then have its allocation increased so that it would have the same fraction of the EGU sector budget as it has a fraction of total electric generation in the EGU sector in the state.

AGA-American Gas Association

allocation-the number of NO_X allowances the permitting authority assigns to a unit or a set-aside. Section 96.2 defines and allocation as "the determination by the permitting authority or the Administrator of the number of NOx allowances to be initially credited to a NOx Budget unit or an allocation set-aside."

allowance-an authorization to emit up to one ton of a pollutant during the control period of the specified year or of any year thereafter. For the NO_X Budget Trading Program, the authorization is from the permitting authority or the Administrator to emit up to one ton of NOx.

ANSI-American National Standards Institute

ASME-American Society for Mechanical Engineering

ASTM-American Society for Testing and Materials

auxiliary load–electric generation used internally as part of operations of the unit, fuel feed equipment, fans, belts, or generator.

baseline period–the period of time from which historical operating information comes, which is then used as the basis for allocations. The model rule for the NO_X Budget Trading Program under the NO_X SIP call used the control periods of 1995, 1996, and 1997 as the baseline period for allocations for 2003, 2004, and 2005.

boiler-an enclosed fossil or other fuel-fired combustion device used to produce heat and to transfer heat to recirculating water, steam, or other medium.

Btu/kWh– British thermal units per kilowatt-hour

buss bar–the point where electricity leaves a power plant to go to the grid.

CCT (combined cycle turbine)--a system comprised of one or more combustion turbines, heat recovery steam generators, and steam turbines configured to improve overall efficiency of electricity generation or steam production.

CEMS--continuous emission monitoring systems. Equipment for continuously measuring and recording characteristics of pollutants in stack gas, such as the NO_X concentration, NO_X emission rate in lb/mmBtu, stack flow rate, or NO_X mass. In the model rule for the NO_X Budget Trading Program for the NO_X SIP call, CEMS are "the equipment required under subpart H of [40 CFR part 96] to sample, analyze, measure, and provide, by readings taken at least once every 15 minutes of the measured parameters, a permanent record of nitrogen oxides emissions, expressed in tons per hour for nitrogen oxides...." Under the NO_X SIP call, CEMS must meet the applicable requirements of 40 CFR part 75.

cement kiln–a device which heats and processes cement.

CFR–Code of Federal Regulations

cogeneration unit–a unit that produces electric energy and useful thermal energy for industrial, commercial heating or cooling purposes, through the sequential use of energy.

CHP or *combined heat and power* or *cogeneration*--producing electric energy and useful thermal energy for industrial, commercial heating or cooling purposes, through the sequential use of energy.

CT or *combustion turbine*-- an enclosed fossil or other fuel-fired device that is comprised of a compressor, a combustor, and a turbine, and in which the flue gas resulting from the combustion of fuel in the combustor passes through the turbine, rotating the turbine.

core source–a source in one of the two core categories designated by EPA for inclusion in the NO_X Budget Trading Program: either an electric generating unit serving a generator greater than 25 MWe, or an industrial boiler or turbine with a design heat input greater than 250 mmBtu/hr.

DAHS–data acquisition and handling system. The computerized system for receiving, calculating, recording, and reporting emissions and operating data in appropriate units of measure. Section 96.2 defines DAHS as "that component of the CEMS, or other emissions monitoring system approved for use under subpart H of [40 CFR part 96], designed to interpret and convert individual output signals from pollutant concentration monitors, flow monitors, diluent gas monitors, and other component parts of the monitoring system to produce a continuous record of the measured parameters in the measurement units required by subpart H of [40 CFR part 96].

EDR–electronic data reporting. Used to describe EPA's standardized format for electronic data reporting.

EGU–electric generating unit.

EIA– Energy Information Administration

electric output--the electric generation (in MWh) from an electric generator.

°F–degrees Fahrenheit

Fossil fuel-- natural gas, petroleum, coal, or any form of solid, liquid, or gaseous fuel derived from such material.

fossil fuel-fired–burning mostly fossil fuels. Section 96.2 defines fossil fuel-fired as "with regard to a unit:
(1)The combustion of fossil fuel, alone or in combination with any other fuel, where fossil fuel actually combusted comprises more than 50 percent of the annual heat input on a Btu basis during any year starting in 1995 or, if a unit had no heat input starting in 1995, during the last year of operation of the unit prior to 1995; or
(2)The combustion of fossil fuel, alone or in combination with any other fuel, where fossil fuel is projected to comprise more than 50 percent of the annual heat input on a Btu basis during any year; provided that the unit shall be "fossil fuel-fired" as of the date, during such year, on which the unit begins combusting fossil fuel. "

Fossil fuel-fired electric generating system or *Fossil fuel-fired generating system*–a system for generating electricity from the burning of fossil fuels, which includes a boiler, turbine, or combined cycle system connected to a generator. The boiler or turbine emits air pollutants and the generator generates electricity.

grid–the interstate system for transmitting electricity.

gross output--the total energy output of a process before making any deductions for any energy output consumed in any way related to generating energy through that process.

heat input–thermal energy going into a process through combustion of fuel. Section 96.2 defines heat input as "the product (in mmBtu/time) of the gross calorific value of the fuel (in Btu/lb) and the fuel feed rate into a combustion device (in mass of fuel/time), as measured, recorded, and reported to the Administrator by the NOx authorized account representative and as determined by the Administrator in accordance with subpart H of [40 CFR part 96], and does not include the heat derived from preheated combustion air, recirculated flue gases, or exhaust from other sources."

heat rate–the efficiency of producing electricity from combustion of fuel, in Btu/kWh.

house load–electric generation used internally within the facility where the electricity is generated.

HRSG or *heat recovery steam generator*–a device for recovering heat left after generating electricity with a turbine and using the recovered heat to produce steam.

IEEE-Institute of Electrical and Electronics Engineers

industrial boiler or turbine–a boiler or turbine used to provide thermal energy to operate an industrial process.

lb/mmBtu heat input– pounds of pollutant per measured million British thermal units of heat input

lb/mmBtu$_{out}$--pounds of pollutant emitted per measured million British thermal units of

thermal output

lb/MWh–pounds of pollutant per megawatt-hour

mmBtu–million British thermal units

model rule or model rule for the NO_X Budget Trading Program–the optional model rule EPA prepared for States that would comply with the NO_X SIP call by joining the NO_X Budget Trading Program, found at 40 CFR part 96.

MWh–megawatt-hour

nameplate capacity–the maximum electric generation an electric generator has been designed to sustain. Section 96.2 defines nameplate capacity as "the maximum electrical generating output (in MWe) that a generator can sustain over a specified period of time when not restricted by seasonal or other deratings as measured in accordance with the United States Department of Energy standards."

net output--the final output of a process after deducting any output consumed in any way related to generating energy through that process. Examples of output to be deducted include thermal output lost through radiation to the outside, thermal output used in thermal recovery, or thermal or electric output used within the plant to operate the unit, generator, fuel handling system, pumps, fans, or emission control equipment. Output used to produce a useful material product besides the thermal output or electric output, such as *{give an example}* does not need to be deducted when calculating net output.

new source set-aside–a portion of allowances taken from a State budget for distribution to new sources instead of to existing sources.

NIST-National Institute for Standards and Technology (formerly the National Bureau of Standards).

non-EGU or *non-electric generating unit*–an industrial boiler or turbine.

non-emitting electric generating system--a system for generating electricity using an energy source that does not involve combusting fuel, such as hydroelectric, nuclear, geothermal, or wind power, and using an electric generator. No NO_X is emitted while the generator generates electricity.

NO_X-emitting electricity generating system–a system for generating electricity from the burning of fuels, which includes a boiler, turbine, or combined cycle system connected to a generator. The boiler or turbine emits NO_X and the generator generates electricity.

NOx–oxides of nitrogen (e.g., NO, NO_2)

NO_X Budget Trading Program–the multi-state nitrogen oxides air pollution control and emission reduction program established under the NO_X SIP call as a means of mitigating the interstate transport of ozone and nitrogen oxides, an ozone precursor.

NO_X SIP call–EPA's requirement that States revise their State implementation plans to control NO_X mass emissions in order to reduce interstate transport of ozone. See 63 FR 57355, October 27, 1998, Finding of Significant Contribution and Rulemaking for Certain States in the Ozone Transport Assessment Group Region for Purposes of Reducing Regional Transport of Ozone.

OTC-Ozone Transport Commission

OTC NO_X Budget Program-a program organized by the Ozone Transport Commission for controlling NO_X emissions in thirteen northeast States and the District of Columbia. EPA administers some portions of the program, such as allowance and emissions tracking.

ozone season–the period from May 1 through September 30 of each year, inclusive.

psi–pounds per square inch

QA–quality assurance. The process of checking the quality of data, including tests on monitoring equipment.

scrubber–a flue gas desulfurization system for controlling SO_2 emissions.

sector budget–the portion of the State budget associated with the electric generating unit sector or the non-electric generating unit sector.

source–a plant or facility that produces air pollutants. Section 96.2 defines a source as " any governmental, institutional, commercial, or industrial structure, installation, plant, building, or facility that emits or has the potential to emit any regulated air pollutant under the Clean Air Act. For purposes of section 502(c) of the Clean Air Act, a "source," including a "source" with multiple units, shall be considered a single "facility."

State budget–the total number of tons of NO_X emissions projected for each State in year 2007 under the NO_X SIP call.

thermal output--the thermal energy from a heat source (in $mmBtu_{out}$/time) that is available for use in another process after the subtraction of heat for boiler feed or combustion air preheating or other heat recovery for combustion

trading budget–the portion of the State budget used to allocate NO_X allowances under the NO_X Budget Trading Program.

unadjusted allocation–the tonnage initially calculated for a unit, source, or generator using an emission rate and operational data, before adjusting to the total number of allowances available for allocation.

Unit –a stationary boiler, combustion turbine, or combined cycle system that primarily combusts fossil fuel.

Updating Output Emission Limitation Workgroup–the stakeholder workgroup that has advised EPA during development of this guidance document. The workgroup reports to the Clean Air, Energy and Climate Subcommittee of the Clean Air Act Advisory Committee.

updating allocation–an allocation that the permitting authority recalculates and redistributes using more current operational data.